

1 OF 2

EAST Search History

10/785, 229

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	1964	502/209 OR 502/305 OR 502/306 OR 502/321 OR 560/231 OR 560/241	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2006/03/22 06:22
L10	1071	L9 AND (CARBOXYLIC OR CARBOXYLIC OR CARBOXYLATE OR ACETIC OR PROPIONIC)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L11	974	L10 AND (CATALYST OR HETEROPOLYACID OR TUNGSTATE OR MOLYBDATE OR VANADATE OR SILICOTUNGSTATE OR PHOSPHOVANADATE OR PHOSPHOMOLYBDATE OR PHOSPHOTUNGSTATE OR SILICOPHOSPHOTUNGSTATE OR SILICOPHOSPHOVANADATE OR SILICOPHOSPHOMOLYBDATE OR SILICOPHOSPHOVANDIC OR SILICOPHOSPHOMOLYBDIC OR SILICOPHOSPHOTUNGSTIC OR TUNGSTIC OR MOLYBDIC OR VANDADIC OR SILICOTUNGSTIC OR PHOSPHOVANDADIC OR PHOSPHOMOLYBDIC)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L12	330	L11 AND (OLEFIN OR OLEFINE)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L13	298	L12 AND (GAS OR VAPOR OR VAPOUR)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L14	226	L13 AND (SUPPORT OR SUPPORTED OR SUPPORTING)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L15	221	L14 AND (REACTOR OR COLUMN OR COLUMNAR OR VESSEL OR APPARATUS OR APPARATTUS OR APARATTUS)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22



EAST Search History

10/785, 229

L16	143	L15 AND CONTACTING	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:22
L17	6	I16 and (lower adj aliphatic adj carboxylic)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:23
L18	54	I16 and ester	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 08:51
L19	0	I18 not I18	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:23
L20	48	I18 not I17	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 06:23
L21	10	I9 and (lower adj (olefin or olefine)) and ((carboxylic adj acid adj ester) or (carboxylic adj ester)) and ((gas adj phase) or ((vapor or vapour) adj phase)) <i>CLASSE + SVB CLASSED (ON PREV. PAGE) & VERY</i>	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/03/22 08:53

221358	ACETICS (ACETIC OR ACETICS)
54670	PROPIONICS 8 PROPIONICS
54674	PROPIONICS (PROPIONIC OR PROPIONICS)
25808	ACRYLIC 1322 ACRYLICS
25845	ACRYLIC (ACRYLIC OR ACRYLICS)
73789	METHACRYLIC 6 METHACRYLICS
73793	METHACRYLIC OR METHACRYLICS (METHACRYLIC OR METHACRYLICS)
5	ESTER AND HETEROPOLYCID AND (GAS OR VAPOR OR VAPOUR) AND (OLEFIC NE OR OLEFIN) AND (CARBOXYLIC OR ACETIC OR PROPIONIC OR ACRYLIC OR METHACRYLIC)

D-1-5 IBIK ABS
ANSWER 1 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
PENSION NUMBER: 2004:1036764 CAPLUS
DOCUMENT NUMBER: 142-40122
Support and catalyst for use in producing lower
aliphatic carboxylic acid ester,
catalyst, manufacture process and method of use,
Kadowaki, Etsuko; Igashi, Tomoyoshi; Oguchi, Wataru;
Uchida, Hiroshi; Narumi, Kousuke
Showa Denko K.K., Japan
U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S.
Ser. No. 70,250 abandoned
on 10/26/2004

US	20031118497	A1	20030626	US	2002-70259	20020304
ZA	2002005804	A	20030819	ZA	2002-9004	20021203
ZA	200300143	A	20040312	ZA	2003-543	2003102
PRIVACY APPLN. INFO.:				JP	2000-112964	A
						20000627

8 PROPTONICS
 54674 PROPTONIC
 (PROPTONIC OR PROPIONIC
 250805 ACRYLIC
 1322 ACRYLICS
 258457 ACRYLIC
 (ACRYLIC OR ACRYLICS)
 73789 METHACRYLIC
 6 METHACRYLICS
 73793 METHACRYLIC
 (METHACRYLIC OR METHYL
 5 ESTER AND HETEROPOLYAC-
 NE, OR OLEFIN) AND (CARE-
 OP, MENTHOPOLYAC, C,

6 METHACRYLICS
73793 METHACRYLIC
(METHACRYLIC OR METHACRYLICS)
5 ESTER AND HETEROPOLYACID AND (GAS OR VAPOR OR VAPOUR) AND (OLEFINS OR OLEFINS) AND (CARBOXYLIC OR ACETIC OR PROPTONIC OR ACRYLIC OR METHACRYLIC)

OTHER SOURCE(S): CASREACT 142:40422
AB The catalyst is produced by a process comprising a step of contacting the catalyst (heteropolyacid salts or their salts) with a gas containing at least one member selected from water, lower aliphatic carboxylic acids and lower aliphatic alcs. The catalyst can exhibit high initial activity and high space time yield, ensure sufficiently long catalyst life in practice in industry, and can prevent the production of byproduct materials. A suitable support is provided for a catalyst, which has a Si content of 39.7-46.3% or a Si content of 85-99% in terms of silicon dioxide or a crush strength of 30 N or more. By the use of a catalyst comprising the support, a lower aliphatic carboxylic acid ester is produced from lower olefin and a lower aliphatic carboxylic acid carboxylic acid in a gas phase without causing great reduction of catalytic activity or cracking or abrasion of the catalyst.

OTHER SOURCE(S): CASREACT 140:43772
 AB Lower aliphatic carboxylic acid esters (e.g., Et acetate) are prepared by esterifying a lower aliphatic carboxylic acid and a lower olefin (e.g., ethylene) into a lower aliphatic carboxylic acid ester using an acid catalyst in a vapor phase, when the system is controlled to contain substantially no acetylene compds., the deterioration of the catalyst can be remarkably prevented from proceeding and in turn a stable operation can be continuously performed for long time. Examples of the acid catalyst which can be used in the present invention include compds. widely known in general as an acid catalyst, such as a heteropolyacid and a salt; process flow diagrams are presented.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:88415 CAPLUS
 DOCUMENT NUMBER: 132:94968
 TITLE: Process and catalysts for the manufacture of esters by the addition reaction of lower alkenes with aliphatic monocarboxylic acids with removal of nitrogenous bases from the reactants
 INVENTOR(S): Coker, Eric Nicholas; Froom, Simon Frederick Thomas; Smith, Warren John
 SOURCE: BP Chemicals Limited, UK
 PCT Int. Appl., 16 pp.
 CODEN: PIIXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 1999-03966	A1	20000127	WO 1999-032099	19990701
W: AE, AL, AM, PT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, ID, IN, IS, JP, KE, KG, KP, KR, LC, LK, LR, LS, IT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UR, US, UZ, VN, YU, ZA, ZN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	WO 1999-03966	20000127	WO 1999-032099	19990701
FW: GH, GM, KE, LS, MN, SD, SL, SZ, UG, 2W, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GA, NE, TD, TG	CA 2336946	20000127	CA 1999-2336946	19990701
BR 9912038	A1	20010403	BR 1999-14038	19990701
EP 1097120	A1	20010509	EP 1999-925533	19990701
R: AV, BE, CH, DE, ES, FR, GB, GR, IT, LU, NL, SE, MC, PT, IE, SI, LT, LV, PT, RO	JP 200250380	T2	JP 2000-560076	19990701
TW 502016	B	2002011	TW 1999-88111867	19990713
US 2001041107	A1	20011129	US 2001-757835	20010103
ZA 2001000331	A	20020111	ZA 2001-331	20010111

PRIORITY APPLN. INFO.: / 162(6)

AB Lower aliphatic esters are prepared in high yield and selectivity by the addition reaction of a lower olefin (e.g., ethylene) with a saturated lower aliphatic monocarboxylic acid in the vapor phase in the presence of a heteropolyacid catalyst; the reactants are rendered substantially free of basic, nitrogen compds. by contact with an acidic, heterogeneous solid prior to being brought into contact with the heteropoly acid catalyst.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1997-192121 CAPLUS
 DOCUMENT NUMBER: 126:85811
 TITLE: Process and heteropolyacid catalysts for the preparation of esters from alkenes and carboxylic acids
 INVENTOR(S): Atkins, Martin Philip; Sharma, Bhushan
 SOURCE: BP Chemicals Limited, UK
 PCT Int. Appl., 23 pp.
 CODEN: EPXXD0
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 757027	A1	19970205	EP 1996-305369	19960722
EP 757027	B1	20000405		
EP 959064	A1	19991124	EP 1999-113642	19960722
EP 959064	B1	20011212		
US 5861540	A	19990119	US 1996-687811	19960726
CA 2182358	AA	19970203	CA 1996-218258	19960801
JP 09118647	A2	19970506	JP 1996-203974	19960801
CN 1150385	A	19970528	CN 1996-112172	19960802
CN 1085197	B	20020522		
JP 2005298327	A2	20051027	JP 2005-204950	20050713
			GB 1995-15813	A 19950802
			GB 1996-3770	A 19960222
			GB 1996-13227	A 19960625
			EP 1996-305369	A3 19960722
			JP 1996-303974	JP 1996-303974

AB Lower aliphatic esters (e.g., EtOCOCH₃) are prepared by reacting a lower olefin (e.g., H₂C=CH₂) with a saturated lower aliphatic monocarboxylic acid (e.g., AcOH) in the vapor phase in the presence of a heteropolyacid catalyst, characterized in that an amount of water in the range from 1-10 mol-% (based on the total of olefin, aliphatic monocarboxylic acid and water) is added to the reaction mixture during the reaction. The presence of water enhances the ester yield. The reaction mixture may optionally contain a diether (e.g., EtoEt) to minimize byproduct formation.

L1 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1994-579103 CAPLUS
 DOCUMENT NUMBER: 121:179103
 TITLE: Preparation of carboxylic esters
 INVENTOR(S): Nagamura, Hiroo; Yagi, Hiromu; Morita, Takehiko; Sugimura, Toshiro
 SOURCE: Nippon Catalytic Chem Ind., Japan
 Jpn. Kotai Tokyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06072951	A2	19940315	JP 1993-7705	19930402
			JP 1992-180824	A1 19920708

PRIORITY APPLN. INFO.: / 162(6)

AB The title compds. are prepared by **gas**-phase treating **carboxylic acids** with **olefins** in the presence of **O** and acid salts or heteropoly acids. A reactor containing H0-5C82-5PW12040 (preparation) given was fed with a 1:13:0.02 mixed **gases of acrylic acid, CH₂:CH₂, and O at 150° and atmospheric for 3 h to give 49.7% Et acrylate.**

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(FILE 'CAPLUS' ENTERED AT 09:10:45 ON 22 MAR 2006)

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=> S ESTER AND (carrier or support or supporting or supported) AND (GAS OR VAPOR OR VAPOUR) AND (OLEFINE OR OLEFIN) AND (CARBOXYLIC OR ACETIC OR PROPIONIC OR ACRYLIC OR METHACRYLIC) MISSING OPERATOR SUPPORTED) AND The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> S ESTER AND (carrier or support or supporting or supported) AND (GAS OR VAPOR OR VAPOUR) AND (OLEFINE OR OLEFIN) AND (CARBOXYLIC OR ACETIC OR PROPIONIC OR ACRYLIC OR METHACRYLIC) 575051 ESTER

427684 ESTERS

802811 ESTER

(ESTER OR ESTERS)

264065 CARRIERS

147441 CARRIERS

(CARRIER OR CARRIERS)

343441 CARRIER

(CARRIER OR CARRIERS)

441539 SUPPORT

123551 SUPPORT

524635 SUPPORT

(SUPPORT OR SUPPORTS)

89557 SUPPORTING

5 SUPPORTINGS

89561 SUPPORTING

(SUPPORTING OR SUPPORTINGS)

197847 SUPPORTED

148523 GAS

503872 GASES

1665041 GAS

(GAS OR GASES)

504059 VAPOR

70554 VAPORS

545733 VAPOR

(VAPOR OR VAPORS)

2270 VAPOUR

187 VAPOURS

2448 VAPOUR

(VAPOUR OR VAPOURS)

108 OLEFINE

250 OLEFINES

355 OLEFINE

(OLEFINE OR OLEFINES)

97518 OLEFIN

100671 OLEFINS

152638 OLEFIN

(OLEFIN OR OLEFINS)

236032 CARBOXYLIC

(CARBOXYLIC OR CARBOXYLICS)

221349 ACETIC

22 ACETICS

221358 ACETIC

(ACETIC OR ACETICS)

54670 PROPONIC

8 PROPONICS

54674 PROPONIC

(PROPONIC OR PROPONICS)

258085 ACRYLIC

1322 ACRYLICS

258457 ACRYLIC

(ACRYLIC OR ACRYLICS)

73789 METACRYLIC

6 METACRYLICS

73793 METACRYLIC

(METACRYLIC OR METHACRYLIC)

53 ESTER AND (CARRIER OR SUPPORT OR SUPPORTING OR SUPPORTED) AND

(GAS OR VAPOR OR VAPOUR) AND (OLEFINE OR OLEFIN) AND (CARBOXYLIC

OR ACETIC OR PROPONIC OR ACRYLIC OR METHACRYLIC)

=> S L2 AND (SILICOTUNGSTIC OR PHOSPHOTUNGSTIC OR SILICONOMOLYBDIC

OR SILICOVANADOTUNGSTIC OR PHOSPHOVANADOTUNGSTIC OR PHOSPHOVANADOMOLYBDIC

1331 SILICOTUNGSTIC

4744 PHOSPHOTUNGSTIC

2773 PHOSPHOMOLYBDIC

11169 SILICONOMOLYBDIC

1 SILICOVANADOTUNGSTIC

11 PHOSPHOVANADOTUNGSTIC

57 PHOSPHOVANADOMOLYBDIC

1 L2 AND (SILICOTUNGSTIC OR PHOSPHOTUNGSTIC OR PHOSPHOMOLYBDIC OR

SILICONOMOLYBDIC OR SILICOVANADOTUNGSTIC OR PHOSPHOVANADOTUNGSTIC

OR PHOSPHOVANADOMOLYBDIC)

=> D

L3 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2004-1036764 CAPLUS

DN 142-40422

TI Support and catalyst for use in producing lower aliphatic carboxylic acid ester, catalyst manufacture process and method of use

IN Kadokawa, Etsuko; Higashi, Tomoyoshi; Oguchi, Wataru; Uchida, Hiroshi; Narumi, Kousuke

PA Showa Denko K.K., Japan

SO U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S. Ser. No. 70,259, abandoned.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 3

PATENT NO. -----

KIND -----

DATE -----

APPLICATION NO. -----

DATE -----

W: AE, AG, AL, AM, AT, BA, BB, BG, BR, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

GM, HR, RU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LR, LS, LT,

LU, LV, MA, MD, MG, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,

SD, SE, SG, SI, SK, SL, TM, TR, TZ, UG, US, UZ, VN,

YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

SL, T2, UG, ZW, AT, BE, CH, CY,

RW: GH, GM, KE, LS, NW, M2, SD, SL, S2, T2, UG, ZW, AT, BE, CH, CY,

APPLE CANTS

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CT, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 US 200312837 A1 20030213 US 2001-389354 20010717
 JP 2002316046 A2 20021029 JP 2001-313675 20011207
 WO 2002064541 A1 20020822 WO 2002-JP1156 20020212
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BY, BZ,
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB,
 GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, LZ, LC,
 LU, LV, MA, MD, MG, MN, MW, NX, MZ, NO, NZ, OM,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT,
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, T2, T3, T4, T5,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
 US 2003118497 A1 20030626 US 2002-70259 20020304
 ZA 2002009804 A 20030819 ZA 2002-9804 20021203
 ZA 200305143 A 20040312 ZA 2003-5143 20030702
 PRAI JP 2000-192664 A 20000627
 US 2000-218803P P 20000118 P
 JP 2001-36038 A 20010213 P
 US 2001-273343P P 20010306 P
 WO 2001-389532 W 20010627 P
 US 2001-88954 B2 20010717 P
 JP 2001-373675 A 20011207 P
 WO 2002-JP1156 W 20020212 P
 US 2002-70259 B2 20020304 P
 OS CASREACT 142:40422 P

=> S L2 AND HETEROPOLYACID
 1348 HETEROPOLYACID
 936 HETEROPOLYACIDS
 1913 HETEROPOLYACID
 (HETEROPOLYACID OR HETEROPOLYACIDS)
 L4 1 L2 AND HETEROPOLYACID

=> D
 L4 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2006 ACS ON STN
 AN 2004-1036764 CAPLUS
 DN 142:0422
 TI Support and catalyst for use in producing lower aliphatic
 carboxylic acid ester, catalyst manufacture process and
 method of use
 IN Kadokawa, Etsuro; Higashi, Tomoyoshi; Oguchi, Hiroshi;
 Narumi, Kousuke
 PA Showa Denko K.K., Japan
 SO U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S. Ser. No. 70,259,
 abandoned.
 CODEN: USXXCO

DT English
 LA English
 FPN CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004242918	A1	20041202	US 2004-705229	20040225
WO 200200589	A2	20020319	JP 2001-113624	20010608
WO 200200589	A3	20020418	WO 2001-JP5532	20010627

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BY, BZ,
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB,
 GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, LZ, LC,
 LU, LV, MA, MD, MG, MN, MW, NX, MZ, NO, NZ, PL,
 SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, VG,
 YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM,
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
 SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GO,
 US 2001-389354 20010717
 US 2001-373675 20011207
 WO 2002-3804 20021203
 PRAI JP 2000-192664 A 20000627
 US 2000-218803P P 20000118 P
 JP 2001-36038 A 20010213 P
 US 2001-273343P P 20010306 P
 WO 2001-389532 W 20010627 P
 US 2001-88954 B2 20010717 P
 JP 2001-373675 A 20011207 P
 WO 2002-JP1156 W 20020212 P
 OS CASREACT 142:40422 P

=> L2 NOT L3
 L2 IS NOT A RECOGNIZED COMMAND
 The previous command name entered was not recognized by the system.
 For a list of commands available to you in the current file, enter
 "HELP COMMANDS" at an arrow prompt (>).

=> S L2 NOT L3
 L5 52 L2 NOT L3
 => LOG HOLD
 COST IN U.S. DOLLARS
 FULL ESTIMATED COST
 DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)
 CA SUBSCRIBER PRICE
 SESSION WILL BE HELD FOR 60 MINUTES
 STN INTERNATIONAL SESSION SUSPENDED AT 09:22:59 ON 22 MAR 2006
 Connecting via Winsock to STN

Welcome to STN International! Enter x: x
 LOGINID:SSSPTA16232CT
 PASSWORD:
 * * * * * RECONNECTED TO STN INTERNATIONAL * * * * *
 SESSION RESUMED IN FILE 'CAPLUS' AT 09:35:56 ON 22 MAR 2006
 FILE 'CAPLUS' ENTERED AT 09:35:56 ON 22 MAR 2006
 COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

COST IN U.S. DOLLARS SINCE FILE TOTAL
FULL ESTIMATED COST ENTRY SESSION 92.05 92.89

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) SINCE FILE TOTAL
CA SUBSCRIBER PRICE ENTRY SESSION -3.75 -3.75

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(FILE 'HOME' ENTERED AT 09:10:45 ON 22 MAR 2006)

FILE 'CAPLUS' ENTERED AT 09:12:50 ON 22 MAR 2006
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53 S ESTER AND (CARRIER OR SUPPORT OR SUPPORTING OR SUPPORTED) AND
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1 S L2 AND HETEROPOLYACID
15 52 S L2 NOT L3

=> D 1-52 IBIB ABS

L5 ANSWER 1 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 142:32943 CAPLUS
DOCUMENT NUMBER: 142:32943
TITLE: Ziegler-Natta catalyst composition for ethylene
Polymerization
Campbell, Richard E., Jr.; Chen, Linfeng; Painter, Roger B.; Reib, Robert N.; Tilstion, Michael W.
Dow Global Technologies Inc., USA
PCT Int. Appl., 18 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO.
WO 20050421 A1 2004-US26641 20040818

W: AE, AG, AL, AM, AT, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GH, GM, HR, IU, ID, IL, IN, IS, JP, KE, KG, KP, KR, LC, LK, LR, LS, LT, IU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SK, SY, TJ, TM, TR, TT, TZ, UA, VC, VN, YU, ZA, RW: BW, GH, GM, KE, LS, MW, NA, SD, SL, SZ, TZ, UA, ZM, AB, AZ, BY, KG, K2, MD, RU, TU, TM, AT, BE, BG, CH, CY, CZ, DE, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BE, BJ, CF, CG, CI, CM, GR, GN, GQ, ML, NR, NE, SN, TD, TG

PRIORITY APPN. INFO.: GB 2003-20692 A 20030903
OTHER SOURCE(S): CASRACT 142:316483
AB A process for making lower aliphatic esters comprises reaction of lower olefins with saturated lower aliphatic monocarboxylic acids in the vapor phase using heteropoly acid catalysts at 1200-1800 Kpa. In a preparation of EtOCa a steam comprising ethylene at 23.81 g/h, HOAc 3.65 mL/h, H2O 1 mL/h, and EtCO 0.54 mL/h at 10 barg and gas hour space velocity of 3600 was fed to a reactor packed with silicotungstic acid on silica at 185° to give, after 132 h on stream, byproduct acetaldehyde 0.14 g/cat/h and MeCO 0.007 g/cat/h.

REFERENCE COUNT: 5
THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
L5 ANSWER 3 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004756672 CAPLUS
DOCUMENT NUMBER: 141:219428
TITLE: Processes for the production of alkenyl esters of lower carboxylic acids and process for the production of alkenyl alcohols
INVENTOR(S): Saito, Meiko; Uchida, Hiroshi
PATENT ASSIGNEE(S): Showa Denko K.K., Japan
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIIXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO.
WO 2004078698 A1 20040316 2004-JP2216

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, CH, CN, CO, CR, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SN, TD, TG

PRIORITY APPN. INFO.: US 2003-505330P P 20030923

AB A process for the polymerization of olefin monomers comprises the steps of: contacting ethylene or a mixture of ethylene and one or more C4-8 α-olefins with a catalyst composition comprising one or more Group 3-10 transition metal containing, Ziegler-Natta, procatalyst compds. (e.g., MgCl₂-supported TiCl₄); one or more alkylaluminum cocatalysts (e.g., triisobutylaluminum); and one or more polymerization control agents (e.g., Et p-ethoxybenzoate). The process is characterized in that at least one such polymerization control agent is an alkyl or aryl ester of an aliphatic or aromatic (poly)carboxylic acid optionally containing one or more substituents comprising a Group 13, 14, 15, or 16 heteroatom.

REFERENCE COUNT: 10
THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005238937 CAPLUS
DOCUMENT NUMBER: 142:316483
TITLE: Preparation of lower aliphatic esters by vapor phase reaction of lower olefins with lower aliphatic carboxylic acids in the presence of a heteropoly acid catalyst Fullerton, William
BP Chemicals Limited, UK
PCT Int. Appl., 22 pp.
CODEN: PIIXD2
Patent
L5 ANSWER 1 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 20040824 CAPLUS
DOCUMENT NUMBER: 2004-GB3619
TITLE: INVENTOR(S): PATENT ASSIGNEE (S): SOURCE: DOCUMENT TYPE: LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
PATENT NO. KIND DATE APPLICATION NO.
WO 20050317 A1 2004-GB3619
W: AE, AG, AL, AM, AT, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, IU, ID, IL, IN, IS, JP, KE, KG, KP, KR, LC, LK, LR, LS, LT, IU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SK, SY, TJ, TM, TR, TT, TZ, UA, VC, VN, YU, ZA, RW: BW, GH, GM, KE, LS, MW, NA, SD, SL, SZ, TZ, UA, ZM, AB, AZ, BY, KG, K2, MD, RU, TU, TM, AT, BE, BG, CH, CY, CZ, DE, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BE, BJ, CF, CG, CI, CM, GR, GN, GQ, ML, NR, NE, SN, TD, TG
PRIORITY APPN. INFO.: GB 2003-20692 A 20030903
OTHER SOURCE(S): CASRACT 142:316483
AB A process for making lower aliphatic esters comprises reaction of lower olefins with saturated lower aliphatic monocarboxylic acids in the vapor phase using heteropoly acid catalysts at 1200-1800 Kpa. In a preparation of EtOCa a steam comprising ethylene at 23.81 g/h, HOAc 3.65 mL/h, H2O 1 mL/h, and EtCO 0.54 mL/h at 10 barg and gas hour space velocity of 3600 was fed to a reactor packed with silicotungstic acid on silica at 185° to give, after 132 h on stream, byproduct acetaldehyde 0.14 g/cat/h and MeCO 0.007 g/cat/h.

PRIORITY APPLN. INFO. :	US 6642325	OTHER SOURCE(S) :	MRPAT 138:304690	ACCESSION NUMBER:	2002:637632 CAPLUS
DOCUMENT NUMBER:	AU 20020530	PATENT ASSIGNEE(S) :	W 20010822	DOCUMENT NUMBER:	137:171395
TITLE:	US 200213766	SOURCE:	CN 200008260	TITLE:	Processes for the use of and supports for the manufacture of catalysts for producing lower aliphatic carboxylic acid esters via the addition-esterification reaction of lower aliphatic carboxylic acids with lower alkenes
ABSTRACT:	US 200205378	DOCUMENT TYPE:	A 20000822	ABSTRACT:	Kadowaki, Etsuko; Narumi, Kousuke; Uchida, Hiroshi Showa Denko K. K., Japan
PRIORITY APPLN. INFO. :	B2	LANGUAGE:	W 20010822	CODEN:	PCT Int. Appl., 45 pp.
OTHER SOURCE(S) :	MRPAT 138:304690	FAMILY ACC. NUM. COUNT:	WO 2001-CN1264	PATENT INFO.:	CODEN: PIXDZ
ABSTRACT:	The catalyst component contains a Ti-containing active component carried on a porous inert carrier, where the Ti-containing active component is a reaction product of at least one type of Mg compound (such as MgCl ₁₄) with at least one type of Mg compound (such as MgCl ₁₂) and at least one type of electron donor compound (such as Et acetate) in a molar ratio of 1:0.5-50:0.5-50, and may also contain at least one type of halide modifier (such as Cl ₃ C(CH ₂ H ₅) ₂) (at a molar ratio of Ti compound/halide modifier = 1:0.5-50), and the porous inert carrier is spherical or spherical-like silica gel having an average particle size 10-100 μm and sp. surface area 300-1000 m ² /g. The catalyst component is combined with an alkyl aluminum compound such as tri-Et aluminum and used in gaseous or slurry polymerization or copolymerization of ethylene, and especially used in preparing high-quality LDPE resin by gaseous fluidized bed condensation technique.	PATENT NO.:	WO 2002064541	KIND:	A1
DOCUMENT NUMBER:	US 200213766	DATE:	20020822	APPLICATION NO.:	WO 2002-JP1156
TITLE:	Preparation of a saturated carboxylic acid ester and use of water-soluble palladium complex	PRIORITY APPN. INFO.:	WO 2002064541	DATE:	20020212
INVENTOR(S) :	Seayad, Jayasree; Seayad, Abdul Majed; Sarkar, Bibhas Ranjani; Chaudhari, Raghnath Vithal	PATENT NO.:	BR 2002007225	APPLICATION NO.:	CA, BR, BY, BZ, CN,
PATENT ASSIGNEE(S) :	Council of Scientific & Industrial Research, India	KIND:	A	DATE:	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GE, GH, GM, HR, RU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LR, LS, LZ, MZ, NO, NZ, OM, PH, PL, PT, RW: GH, GM, KE, LS, MW, MZ, SD, SE, SG, SI, SK, SL, TU, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, KG, KZ, MD, RU, TU, TM, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, SN, TD, TG
SOURCE:	U.S. Pat. Appl. Publ., 9 pp.	DATE:	CN 2002-3691 CAPLUS	PRIORITY APPN. INFO.:	JP 2002-316048 A2
DOCUMENT NUMBER:	US 137:29510	PRIORITY APPN. INFO.:	JP 2002-136016 A1	DATE:	EP 2002-313675
TITLE:	Preparation of a saturated carboxylic acid ester and use of water-soluble palladium complex	PATENT NO.:	EP 2002-136016	APPLICATION NO.:	EP 2002-131471
INVENTOR(S) :	Seayad, Jayasree; Seayad, Abdul Majed; Sarkar, Bibhas Ranjani; Chaudhari, Raghnath Vithal	KIND:	A1	DATE:	20020212
PATENT ASSIGNEE(S) :	Council of Scientific & Industrial Research, India	DATE:	BR 2002007225	APPLICATION NO.:	BR 2002-7225
SOURCE:	U.S. Pat. Appl. Publ., 9 pp.	PRIORITY APPN. INFO.:	BR 2002007225	DATE:	BR 2002-7225
DOCUMENT NUMBER:	US 20020537964	PATENT NO.:	CN 149120	PRIORITY APPN. INFO.:	CN 2002-804859
TITLE:	Patent	KIND:	A	DATE:	20020212
LANGUAGE:	English	DATE:	US 20030626	APPLICATION NO.:	US 2003-70259
FAMILY ACC. NUM. COUNT:	1	PRIORITY APPN. INFO.:	ZA 2003005143 A	DATE:	20030704
PATENT INFORMATION:		PATENT NO.:	US 20040312	PRIORITY APPN. INFO.:	ZA 2003-5543
ABSTRACT:	US 6479693	KIND:	A1	DATE:	200401202
OTHER SOURCE(S) :	MRPAT 137:249510	DATE:	US 2004-755229	PRIORITY APPN. INFO.:	US 2004-755229
ABSTRACT:	A carboxylic acid ester R ₃ R'CC(R ₁ R ₂)CO ₂ R (I) is prepared, where R = alkyl or aryl, R ₁ = aryl, substituted aryl, naphthyl or substituted naphthyl or aryl, R ₂ -5 = H or aryl, by reacting an olefin R ₃ C:CR ₁ R ₂ (R ₁ = aryl, substituted aryl, naphthyl or substituted naphthyl or alkyl, R ₂ -5 = H or alkyl, in the presence of an acic, and an organic solvent and a supported aqueous phase Pd complex catalyst, and in presence or absence of a protonic acid and an alkali metal halide, under CO atmospheric, cooling the reaction mixture to ambient temperature, depressurizing the reactor, flushing the reaction vessel with inert gas, separating the catalyst by filtration, and removing the solvent and isolating I. Thus, styrene (0.14 mol), MeOH, cyclohexane, and Pd/TiPr ₂ Si ₃ (TiPr ₂ Si ₃ (tris(sodium 3-sulfonatophenyl)phosphine)) was heated to 75°, pressurized to 500 psig with CO, and stirred 12 h to give a mixture of 2- and 3-methylphenyl propionates, selectivity 54.26% and 45.73%, resp.	PATENT NO.:	US 2001-883354	PRIORITY APPN. INFO.:	US 2001-883354
DOCUMENT NUMBER:	B2	DATE:	US 20020112	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2001-813086	PRIORITY APPN. INFO.:	US 2001-883354
ABSTRACT:	A carboxylic acid ester R ₃ R'CC(R ₁ R ₂)CO ₂ R (I) is prepared, where R = alkyl or aryl, R ₁ = aryl, substituted aryl, naphthyl or substituted naphthyl or aryl, R ₂ -5 = H or aryl, by reacting an olefin R ₃ C:CR ₁ R ₂ (R ₁ = aryl, substituted aryl, naphthyl or substituted naphthyl or alkyl, R ₂ -5 = H or alkyl, in the presence of an acic, and an organic solvent and a supported aqueous phase Pd complex catalyst, and in presence or absence of a protonic acid and an alkali metal halide, under CO atmospheric, cooling the reaction mixture to ambient temperature, flushing the reaction vessel with inert gas, separating the catalyst by filtration, and removing the solvent and isolating I. Thus, styrene (0.14 mol), MeOH, cyclohexane, and Pd/TiPr ₂ Si ₃ (TiPr ₂ Si ₃ (tris(sodium 3-sulfonatophenyl)phosphine)) was heated to 75°, pressurized to 500 psig with CO, and stirred 12 h to give a mixture of 2- and 3-methylphenyl propionates, selectivity 54.26% and 45.73%, resp.	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2002-70532
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2002-70532
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
ABSTRACT:	A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid esters (e.g., Et acetate) by the esterification addition reaction of a lower olefin (e.g., acetic acid) in the gas phase in a lower aliphatic carboxylic acid (e.g., ethylene) with a lower aliphatic carboxylic acid (e.g., acetic acid) in the gas phase of 39-7-46.3% by mass or a silicon support has a silicon content of 95-99% by mass in terms of silicon dioxide or a crush strength of ≥ 230 N; the catalyst is a heteropoly acid or salt on the support. By the use of a catalyst comprising the support, a lower aliphatic carboxylic acid ester is produced from a lower olefin and a lower aliphatic carboxylic acid without causing a great reduction of catalytic activity or cracking or abrasion of the catalyst.	PATENT NO.:	US 2001-883354	PRIORITY APPN. INFO.:	US 2001-883354
DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
ABSTRACT:	A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid esters (e.g., Et acetate) by the esterification addition reaction of a lower olefin (e.g., acetic acid) in the gas phase in a lower aliphatic carboxylic acid (e.g., ethylene) with a lower aliphatic carboxylic acid (e.g., acetic acid) in the gas phase of 39-7-46.3% by mass or a silicon support has a silicon content of 95-99% by mass in terms of silicon dioxide or a crush strength of ≥ 230 N; the catalyst is a heteropoly acid or salt on the support. By the use of a catalyst comprising the support, a lower aliphatic carboxylic acid ester is produced from a lower olefin and a lower aliphatic carboxylic acid without causing a great reduction of catalytic activity or cracking or abrasion of the catalyst.	PATENT NO.:	US 2001-883354	PRIORITY APPN. INFO.:	US 2001-883354
DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
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TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
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TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
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DOCUMENT NUMBER:	B2	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
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TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
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TITLE:	US 2001-813086	DATE:	20010320	PRIORITY APPN. INFO.:	US 2001-883354
INVENTOR(S) :	MRPAT 137:249510	PATENT NO.:	US 2002-70532	PRIORITY APPN. INFO.:	US 2002-70532
ABSTRACT:	A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid esters (e.g., Et acetate) by the esterification addition reaction of a lower olefin (e.g., acetic acid) in the gas phase in a lower aliphatic carboxylic acid (e.g., ethylene) with a lower aliphatic carboxylic acid (e.g., acetic acid) in the gas phase of 39-7-46.3% by mass or a silicon support has a silicon content of 95-99% by mass in terms of silicon dioxide or a crush strength of ≥ 230 N; the catalyst is a heteropoly acid or salt on the support. By the use of a catalyst comprising the support, a lower aliphatic carboxylic acid ester is produced from a lower olefin and a lower aliphatic carboxy				

TITLE: Process for producing ethylene-**olefin**
INVENTOR(S): Ford, Randal Ray; Vanderbilt, Jeffrey James; Williams, Barry; Stephen
PATENT ASSIGNEE (S): Eastman Chemical Co., USA
SOURCE: PCT Int. App., 64 pp.
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000075202	A1	20001214	WO 1999-US22957	19991014
W: BR, CA, CN, JP, MX Rw: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE	AA	20001214	US 1999-386545	19990831
CA 2375621	AA	20001214	CA 1999-2315621	19991014
BR 9917354	A	20020226	BR 1999-17354	19991014
EP 1183284	A1	20020306	EP 1999-951735	19991014
EP 1183284	B1	20050427	EP R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI	R: BE, CH, DE, FR, GB, LI
JP 2003501526	T2	20030114	JP 2001-502482	19991014
PRIORITY APPLN. INFO.:			US 1999-131979P	P 19990607
			US 1999-386545	A 19990831
AB			WO 1999-US22957	W 19991014

The process uses Ziegler-Natta catalysts for producing ethylene-**olefin** interpolymers having a given melt index and d, and a reduced melting peak temperature (T_m). The process involves contacting and ≥1 other **olefin** under polymerization conditions with a Ziegler-Natta catalyst and ≥1 modifier comprising ≥1 element from Group 15 and/or Group 16 in ants. sufficient to reduce the melting peak temperature of the interpolymer. THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE COUNT: 5

15 ANSWER 10 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:168033 CAPLUS
DOCUMENT NUMBER: 131:118312
TITLE: Attrition resistant catalysts and sorbents based on heavy metal poisoned FCC catalysts
INVENTOR(S): Gangwal, Santosh; Jothimurugesan, Kandaswamy
PATENT ASSIGNEE (S): Research Triangle Institute, USA
SOURCE: U.S., 9 pp.
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5928980	A	19990727	US 1997-795669	19970206

PRIORITY APPLN. INFO.: AB A heavy metal poisoned, spent FCC catalyst is treated by chemical impregnating the poisoned catalyst with a new catalytic metal or metal salt to provide an attrition resistant catalyst or sorbent for a different synthesis, or absorption processes, such as catalysts for Fischer-Tropsch synthesis, and sorbents for removal of sulfur **gases** from fuel **gases** and fine **gases**. The heavy metal contaminated FCC catalyst is directly used as a support for preparing catalysts

having new catalytic properties and sorbents having new sorbent properties, without removing or passivating the heavy metals on the spent FCC catalyst as an intermediate step.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

15 ANSWER 11 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:76040 CAPLUS
DOCUMENT NUMBER: 130:1188
TITLE: A process for the preparation of a magnesium halide-supported metallocene polymerization catalyst
INVENTOR(S): Sengartha, Soumen; Sivaram, Srinivasan
PATENT INFORMATION: Council of Scientific and Industrial Research, India
SOURCE: Eur. Pat. Appl., 10 pp.
CODEN: EPXDW
Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 87484	A1	19981118	EP 1997-30286	19970514
EP 87484	B1	20041215	R: BE, CH, DE, FR, GB, LI	R: BE, CH, DE, FR, GB, LI

PRIORITY APPLN. INFO.: IN 1997-DE795
AB A magnesium halide-supported metallocene catalyst, useful for polymerization of **olefins** in slurry or **gas** phase, is manufactured by (a) preparing a solution (solution A) of the magnesium halide compound via Grignard decomposition which consists of preparing the slurry of magnesium metal in an electron donor solvent, and heating the slurry of magnesium metal to 0°C to 50°C for a period of 10 min to 4 h while adding a dihaloalkane compound; (b) sep. preparing a solution of metallocene compound into the same electron donor solvent (solution B); (c) heating the solution B to 0°C to 50°C for a period ranging between 10 min to 1 h; (d) adding solution B into solution A in a period ranging between 10 min to 2 h, while keeping the temperature in the range of 0 to 50°C; (e) cooling the resultant homogeneous solution to room temperature under inert atmospheric;

(f) pouring the reaction mixture into a liquid hydrocarbon medium in which all the components will be partly or completely insol. to precipitate the catalyst; (g) separating the solid catalyst precipitated by conventional methods; (h) washing the solid catalyst by a hydrocarbon solvent; and (i) drying the solid under vacuum at a temperature ranging between 0 to 50°C.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

15 ANSWER 12 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:444065 CAPLUS
DOCUMENT NUMBER: 122:188400
TITLE: Catalyst and its use in the preparation of unsaturated carboxylic acid esters
INVENTOR(S): White, James F.; Slawski, Barbara; White, Geoffrey
PATENT INFORMATION: Engelhard Corp., USA
SOURCE: U.S., 11 pp.
CODEN: USXXAM
Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5928980	A	19990727	US 1997-795669	19970206

PRIORITY APPLN. INFO.: AB A heavy metal poisoned, spent FCC catalyst is treated by chemical impregnating the poisoned catalyst with a new catalytic metal or metal salt to provide an attrition resistant catalyst or sorbent for a different synthesis, or absorption processes, such as catalysts for Fischer-Tropsch synthesis, and sorbents for removal of sulfur **gases** from fuel **gases** and fine **gases**. The heavy metal contaminated FCC catalyst is directly used as a support for preparing catalysts

PRIORITY APPLN. INFO.: -----

AB Title catalysts comprise (i) ≥ 1 palladium group metals and/or compounds thereof; (ii) gold and/or compounds thereof; and (iii) optionally, ≥ 1 promoters selected from Cu, Ni, Co, Fe, Mn, Pb, Ag and their compounds. Preferably these catalyst compns. contain ≥ 1 promoters wherein the gram ratio of metal in the promoter to palladium group metal is ≤ 4 , and the catalysts are deposited on a support material treated with ≥ 1 alkali metal bases and ≥ 1 alkali metal silicates prior to deposition. In some cases, the catalysts are further impregnated with ≥ 1 alkali or alkaline-earth carboxylates as promoters and activators. Ethylenically unsat'd esters are prepared with improved activity and selectivity by reacting in the vapor phase ≥ 1 olefinic compds. with ≥ 1 carboxylic acid and mol. oxygen in the presence of the foregoing catalyst compns. Thus, vapor-phase reaction of ethylene at 140° with KOAc and O over silica beads that were pretreated with KOH and K silicate solution at 16.2 and 127.2 g/l beads, resp., and impregnated with Na₂PdCl₄, NaAuCl₄, CuCl₂, and KOAc to contain 4.1, 1.8, 6.3, and 22 g/l catalyst of Pd, Au, Cu, and KOAc, resp., gave vinyl acetate at space-time yield 158.3 (95% selectivity) and selectivity 96.3% (125 space-time yield).

15 ANSWER 13 OF 52 CAPLUS COPYRIGHT 2006 ACS ON STN
ACCESSION NUMBER: 1994-056552 CAPLUS
DOCUMENT NUMBER: 121-265552
TITLE: Components and catalysts for the Polymerization of Olefins.
INVENTOR(S): Sacchetti, Mario; Cuffiani, Illaro; Pennini, Gianni
SOURCE: Spherilene S.r.l., Italy
DOCUMENT TYPE: Eur. Pat. Appl., 15 pp.
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION: -----

PATENT NO. DATE KIND APPLICATION NO. DATE
EP 601525 A1 19940115 EP 1993-19646 19931206
EP 601525 B1 19990210 IN 1993-C121 19931124
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, NL, PT, SE
IN 181561 A 19980111 AT 1993-19646 19931206
AT 176676 E 19990215 ES 1993-19646 19931206
ES 2129063 T3 19990215 AU 1993-52295 19931208
AU 932295 A1 19940223 AU 1993-52295 19931208
AU 675551 B2 19961114 A 19940808 ZA 1993-9210 19931208
ZA 9309210 A2 19940808 JP 1993-38020 19931208
JP 07300507 C1 19990220 RU 1993-542028 19931208
RU 2126420 A 19940613 NO 1993-496 19931209
NO 9304496 A1 19980324 IL 1993-107958 19931209
IL 107958 A1 -----

PRIORITY APPLN. INFO.: -----

AB Title catalysts comprise (i) ≥ 1 palladium group metals and/or compounds thereof; (ii) gold and/or compounds thereof; and (iii) optionally, ≥ 1 promoters selected from Cu, Ni, Co, Fe, Mn, Pb, Ag and their compounds. Preferably these catalyst compns. contain ≥ 1 promoters wherein the gram ratio of metal in the promoter to palladium group metal is ≤ 4 , and the catalysts are deposited on a support material treated with ≥ 1 alkali metal bases and ≥ 1 alkali metal silicates prior to deposition. In some cases, the catalysts are further impregnated with ≥ 1 alkali or alkaline-earth carboxylates as promoters and activators. Ethylenically unsat'd esters are prepared with improved activity and selectivity by reacting in the vapor phase ≥ 1 olefinic compds. with ≥ 1 carboxylic acid and mol. oxygen in the presence of the foregoing catalyst compns. Thus, vapor-phase reaction of ethylene at 140° with KOAc and O over silica beads that were pretreated with KOH and K silicate solution at 16.2 and 127.2 g/l beads, resp., and impregnated with Na₂PdCl₄, NaAuCl₄, CuCl₂, and KOAc to contain 4.1, 1.8, 6.3, and 22 g/l catalyst of Pd, Au, Cu, and KOAc, resp., gave vinyl acetate at space-time yield 158.3 (95% selectivity) and selectivity 96.3% (125 space-time yield).

15 ANSWER 14 OF 52 CAPLUS COPYRIGHT 2006 ACS ON STN
ACCESSION NUMBER: 1994-322766 CAPLUS
DOCUMENT NUMBER: 120-322766
TITLE: Preparation of unsaturated carboxylic acid esters with palladium catalysts
INVENTOR(S): Harada, Hiromi; Hamachi, Hideyuki; Nishizuka, Masaya; Kato, Takao; Saito, Toshihiro
PATENT ASSIGNEE(S): Tosoh Corp., Japan
SOURCE: Jpn. Kokai Tokyo Koho, 4 pp.
Coden: JRXKF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION: -----

PATENT NO. KIND DATE APPLICATION NO. DATE
----- A2 19940201 -----
JP 06023082 ----- JP 1992-200102 19920706
PRIORITY APPLN. INFO.: -----
OTHER SOURCE(S): CRSPRACT 120-322766
AB Unsrt. carboxylic acid esters are prepared by reaction of olefins, O, and AcOH in gas phases in presence of Pd catalysts prepared by ion exchange of OH on the surfaces of catalyst supports with Pd ammine complexes, optional calcination under O-containing gases, reduction of the supports, and supporting alkali metal acetates on the supports. Silica was impregnated with an aqueous NH₃ solution of [Pd(NH₃)₄C12], dried at 110° for 3 h, heated at 400° for 5 h, reduced by H at 300° for 5 h, impregnated with aqueous AcOH, and dried at 110° for 3 h to prepare a Pd- and AcOH-containing catalyst. A 50:9:7:33 mixture of propylene, O, AcOH, and N was passed through the catalyst at 150°, 5 atm, and 13.6 NL/h to give 307 g/l allyl acetate with 95.8%

selectivity.

L5 ANSWER 15 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1994:191137 CAPIUS
DOCUMENT NUMBER: 120:191137
TITLE: Preparation of lower fatty acid **esters**
INVENTOR(S): Suzuki, Toshiro; Takahashi, Shunsei; Sano, Kenichi
PATENT ASSIGNEE(S): Showa Denko Kk, Japan
SOURCE: Jpn. Kokai Tokyo Koho, 4 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03294894	A2	19931109	JP 1992-101364	19920421
JP 2850636	B2	19901214	IN 2000-D6957	20001025
IN 189050	A	20021214	JP 1992-101364	A 19920421

OTHER SOURCE(S): CASREACT 120:191137
AB The title compds. are prepared by **gas-phase esterification of** lower fatty acids with lower **olefins** using **supported** catalysts of heteropoly acid salts of Li, Cu, Mg, and/or Ga. A reactor containing Li phosphotungstate **supported** on SiO₂ (preparation given) was fed with mixed **gases** containing AcOH and CH₂:CH₂ at 150° and 5 kg/cm²-gage to give 91.8% Et acetate.

L5 ANSWER 16 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1992:133032 CAPIUS
DOCUMENT NUMBER: 117:31032
TITLE: Steam stripping for removal of organic pollutants from water. 2. **vapor-liquid** equilibrium data
AUTHOR(S): Huang, Yng Long; Olson, James D.; Keller, George E., II
CORPORATE SOURCE: Union Carbide Chem. and Plast. Co. Inc., South Charleston, WV, 25303, USA
SOURCE: Industrial & Engineering Chemistry Research (1992), 31(7), 1759-68
CODEN: IECRED; ISSN: 0888-5885
JOURNAL:
DOCUMENT TYPE: English
LANGUAGE:

AB In **support** of the simple tools for steam stripping presented in part 1, the estimation of the infinite-dilution **vapor-liquid** equilibrium constants, (K_{∞}) for organic pollutants in dilute aqueous soils are discussed. A database of K_{∞} at 1 atm and 100° as well as at 25° was established for a number of common organic pollutants. In addition, a correlation of K_{∞} with mol. structure was formulated. The concept that the effectiveness of stripping an organic pollutant from water is mainly determined by its hydrophobicity (indicated by its low aqueous solubility) rather than by its pure-component volatility is also clarified. On the basis of the guideline proposed in Part 1, the estimated K_{∞} values reveal that steam stripping is effective in removing hydrophobic (sparingly soluble) pollutants such as paraffins, **olefins**, aroms., halogenated hydrocarbons, and compds. with dominant hydrocarbon segments.

L5 ANSWER 17 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1992:237786 CAPIUS
DOCUMENT NUMBER: 116:237786
TITLE: Hollow cylindrical **carrier** as catalyst support for production of unsaturated **esters**

INVENTOR(S): Matsumoto, Kenji; Fuchigami, Yoshiro
PATENT ASSIGNEE(S): Kuraray Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 464633	A1	19920108	EP 1991-110562	19910626
EP 464633	B1	19940119	JP 1991-99591	19910403
JP 04227069	A2	19920817	US 1994-227700	A 1990703
JP 04227069	A	19941206	JP 1990-171725	A 1990703
US 5371277			US 1991-233376	B1 19910628
			US 1993-52292	B1 19930426

AB Production of unsatd. **esters** with high catalyst activity and low pressure drop in the catalyst layer is achieved by **gas-phase** reaction of **olefin**, **carboxylic acid**, and O in the presence of a catalyst (e.g. Pd) **supported** on a hollow cylindrical **carrier** having ≥ 1 through channel. A **gas** containing C₂H₄ 72%, O₂ 8%, and AcOH 20% volume was passed through a catalyst layer (containing Pd 5.0, Au 0.5, and KOAc 20 g/L on a hollow cylindrical silica) at 160° and 2000 h⁻¹ giving vinyl acetate with selectivity 94% and pressure drop 0.20 kg/cm², vs. 95 and 0.26 resp., when using a spherical silica **support**.

L5 ANSWER 18 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 116:227394 CAPIUS
DOCUMENT NUMBER: 116:227394
TITLE: Chromatographic method for analysis of aliphatic **olefin** alcohols, acetates and ketones

INVENTOR(S): Nestercova, I. P.; Rastegieva, V. M.
PATENT ASSIGNEE(S): All-Union Scientific-Research Institute of Biological Methods of Plant Protection, USSR
SOURCE: U.S.S.R. From: Otkrytiya, Izobret. 1991, (31), 182.
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 1672352	A1	19910823	SU 1988-444533	19880513
SU 1672352			SU 1988-444533	19880513

AB The mixture is separated in a capillary column with a stationary phase in a **carrier-gas** flow with subsequent detection of separated isomers. To increase separation selectivity and expand the circle of sample substances - among them insect sex attractants, liquid-crystal cholesteryl-p-methoxybenzoate is used as the stationary phase, and the separation is performed at 170-190° for a **carrier-gas** rate in the column over the interval of 6.0-15.0 cm/s.

L5 ANSWER 19 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1992:173577 CAPIUS
DOCUMENT NUMBER: 116:173577
TITLE: Preparation of catalysts for unsaturated **ester** manufacture
INVENTOR(S): Ikumi, Toshi; Takagi, Isato; Morofuji, Masamitsu; Fujiwara, Hideetsu; Yoshida, Soichi
PATENT ASSIGNEE(S): Tosoh Corp., Japan Synthetic Rubber Co., Ltd.

SOURCE:	Jpn. Kokai Tokyo Koho, 8 pp.		
DOCUMENT TYPE:	PATENT		
LANGUAGE:	Japanese		
FAMILY ACC. NUM. COUNT:	1		
PATENT INFORMATION:	PATENT NO.	KIND	DATE
	-----	-----	APPLICATION
JP 03275141	A2	19911205	JP 1990-77
PRIORITY APPLN. INFO.:	CASRACT 116:173577		JP 1990-77
OTHER SOURCE(S):	AB Pd catalysts for preparation of unsat'd. diesters carbonylic acids, and O are prepared by treating supports in aqueous tartaric acid containing 0.1% subsequent reduction A mixture of PdCl ₂ 13.4 g dissolved in an aqueous solution containing 25% t then 150		
9	CsOAc and dried to give a Pd catalyst. A mixed butadiene, AcOH, O, and N (20/20/12/48) was treated catalyst at 185° for 100 h to give 95.3% diazoxo 95.1% 1,4-isomer.		
24	The solid was then impregnated in an aqueous solu CsOAc and dried to give a Pd catalyst. A mixed butadiene, AcOH, O, and N (20/20/12/48) was treated catalyst at 185° for 2 h and at 400 20 h, and reduced in H at 200° for 2 h and at 400		
15	ANSWER 20 OF 52	CRPIUS COPYRIGHT 2006 ACS on ST	-----
	ACCESSION NUMBER:	1991-09444 CAPLUS	
	DOCUMENT NUMBER:	115:94244	
	TITLE:	Preparation and uses Ziegler-catalysts	
	INVENTOR(S):	Bailly, Jean Claude Andre; Be	
	PATENT ASSIGNEE (S):	BP Chemicals Ltd., UK; BP Che	
	SOURCE:	Eur. Pat. Appl., 11 PP.	
	DOCUMENT TYPE:	CODEN: EFXD0W	
	FAMILY ACC. NUM. COUNT:	Patent	
PATENT INFORMATION:	LANGUAGE:	English	
	PATENT NO.	KIND	DATE
	-----	-----	APPLICATION
EP 437080	A1	19910717	EP 1990-31
R. AT., BE, CH,	A1	19910717	GB, FR, IT, I
FR 2656615	B1	19930507	FR 1990-19
FR 2656615	A1	19920421	US 1990-62
US 5106805	A1	19910711	AU 1990-62
AU 9006355	AA	19910705	CA 1990-20
CA 2033028	AA	19910705	NO 1990-52
NO 9005634	A	19920105	JP 1990-45
JP 04039309	A2	19920210	JP 1991-25
FI 9100020	A	19910705	FI 1991-16
HU 591002	A2	19920629	HU 1991-16
CN 1033243	A	19910724	CN 1991-16
BR 9100019	A	19911022	BR 1991-16
PRIORITY APPLN. INFO.:	AB Ziegler-Natta catalysts, useful for the polymerisation the manufacture of elastomers, are prepared by cohydrocarbon as spheroidal support comprising MgC ₂ electron donor compound free of labile H, successively compound containing labile H, and then with a donor compound containing labile H, and then with the capable of reducing V and Ti compds., washing the liquid hydrocarbon, and then contacting the washed hydrocarbon-soluble V and Ti compds. Thus,		

DOCUMENT TYPE:	PATENT NUMBER:	KIND	DATE	APPLICATION NO.	DATE
DOCUMENT NUMBER:	1985-422053 CAPLUS				
ITEM:	103-23053				
INVENTOR/ASSIGNEE(S):	Deodorization of polyolefins Ube Industries, Ltd., Japan Jpn. Kokai Tokyo Koho, 4 PP. CODEN: JKXAF	A2	1980228	JP 1983-146694	19830812
SOURCE:	Patent	B4	19902615	JP 1983-146694	19830812
LANGUAGE:	Japanese				
FAMILY ACC.:	1				
PATENT INFORMATION:					
PATENT NO.:					
JP 60038408					
JP 0403164					
RIGHTS APPN. INFO.:					
B Polylefins prepared by polymerizing C \geq 3 α -olefins in the presence of a solid catalyst component containing Mg, halogen, and Ti, an organoaluminum compound, and an aromatic carboxylic acid ester were deodorized by contacting with CS ₈ alc. vapor. Thus, 15 mmol suspended in 30 mL toluene was treated over 30 min with a solution of 15 mmol MeSi(OEt) ₃ in 10 mL toluene at room temperature, heated at 60° for 1 h, cooled to -10°, treated over 30 min with a solution of 27 mmol BuMgCl in dilisononyl ether, and heated at 30° for 1 h to obtain carrier. The carrier suspended in 30 mL toluene was heated with 150 mmol TiCl ₄ and 6.5 mmol EtOBz at 90° for 1 h and filtered hot to obtain a solid product, which was then suspended in toluene heated with 150 mmol TiCl ₄ at 90° for 1 h, and filtered hot to obtain a solid catalyst component (I) with Ti content 2.8%. A heptane suspension of 16 mg I, 0.24 mmol MeO2C6H4Me ₂ in 10 mL heptane, and 0.94 mmol Et ₃ Al in 4 mL heptane were mixed and autoclaved with 1200 mL liquid propylene at 65° for 1 h to obtain 250 g powdered polypropylene (19003-07-0) with boiling heptane-insol. content 94.5%. The polymer (200 g) fluidized with N was contacted with 120 g/2-propanol (67-63-0) vapor at 110° for 30 min to obtain sub-stantial deodorization.					

PRIORITY APPLN. INFO.: DE 1978-2911211 A 19780315
 AB The efficiency of catalysts for the title reaction was improved by using catalyst supports consisting of particles with star-shaped cross-sections or ribbed particles (vs. pellets or Raesig rings). Thus, 1377 g SiO₂ particles (5 pointed star cross-section), point h. 1.7 mm., diameter 6 mm., bulk d. 0.27 kg/l, were treated with 63 g Pd(OAc)₂, 63 g KOAc and 50 g Bi (OAc)₃ in 1093 mL HOAc and 13 g Ba aurate and 84 g H₂O in 393 mL HOAc and the catalyst allowed to stand at 60° for 270 mbar under N. The catalyst gave 963 g/L/h conversion of propene and HOAc to allyl acetate and 648 g/L/h conversion of isobutene and HOAc to methyl acetoate. Data for runs with 4 conventional supports were also given.

DOCUMENT TYPE:	PCT/US06/04522						
CODEN:	JRXAFA						
Patent							
LANGUAGE:	Japanese						
FAMILY ACC. NUM. COUNT:	1						
PATENT INFORMATION:							
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	SOURCE:	INVENTOR(S):	PATENT ASSIGNEE(S):
JP 6003408	A2	1980228	JP 1983-146594	19830812	-----	Unsatuated esters Klass, Donald L. Union Oil Co., USA	U.S., 6 pp. COPOLYMER OF PROPENE AND 1,4-POLYBUTENE; POLY(1,4-POLYBUTENE-1,4-POLYPROPENE)
JP 0403164	B4	19920615	JP 1983-146694	19830812	-----	-----	-----
PRIORITY APPN. INFO.:							
B Polylefins prepared by polymerizing C ₂ - ₃ α-olefins in the presence of a solid catalyst component containing Mg, halogen, and Ti, an organoaluminum compound, and an aromatic carboxylic acid ester were deodorized by contacting with CS ₈ alc. vapor. Thus, 15 mmol suspended in 30 mL toluene was treated over 30 min with a solution of 15 mmol MeSi(OEt) ₃ in 10 mL toluene at room temperature, heated at 60° for 1 h, cooled to -10°, treated over 30 min with a solution of 27 mmol BuMgCl in diisopropyl ether, and heated at 30° for 1 h to obtain a carrier. The carrier was suspended in 30 mL toluene and heated over 150 mmol TiCl ₄ and 6.5 mmol EtOBz at 90° for 1 h and filtered hot to obtain a solid product which was then suspended in toluene heated with 150 mmol TiCl ₄ at 90° for 1 h, and filtered hot to obtain a solid catalyst component (I) with Ti content 2.8%. A heptane suspension of 16 mg I, 0.24 mmol MeOEt ₂ AlMe-P in 10 mL heptane, and 0.94 mmol Et ₂ Al in 4 mL heptane were mixed and autoclaved with 1200 mL liquid propylene at 65° for 1 h to obtain 250 g powdered polypropylene [19003-07-0] with N content 94.5%. The polymer (200 g) fluidized with N ₂ at 120 g/h 2-propanol (67-63-0) vapor at 110° for 30 min to obtain substantial deodorization.							
DOCUMENT TYPE:							
LANGUAGE:	English						
FAMILY ACC. NUM. COUNT:	2						
PATENT INFORMATION:							
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	SOURCE:	INVENTOR(S):	PATENT ASSIGNEE(S):
US 4057575	A	19711108	-----	-----	-----	-----	-----
US 4161610	A	19790717	-----	-----	-----	-----	-----
PRIORITY APPN. INFO.:							
AB Olefins are oxidized to unsat. esters of organic acids or acetals and/or unsat. ethers of alcohols by contacting the olefin with an organic acid or alc. reactant in the presence of a catalyst comprising a compound of a Group VIII noble metal and a redox agent; the catalyst is kept active by contacting it with O ₂ . Thus, C ₂ H ₄ [74-85-1] vapor was passed through liquid HOAc [64-19-7] to vaporize some of the HOAc and the resulting mixture was passed through a catalyst bed consisting of PdCl ₂ , HCl, and CuCl ₂ supported on silica. Vinyl acetate [108-65-4] was removed as product from the effluent gas stream, and the unreacted C ₂ H ₄ was recycled to the reactor. The flow of C ₂ H ₄ and HOAc to the reactor was interrupted periodically, and a stream of O ₂ was passed through the catalyst bed to regenerate the catalyst.							

5. ANSWER 23 OF 52	CAPLUS COPYRIGHT 2006 ACS ON STN 1980-41359 CAPLUS 92:41359	CAPLUS ANSWER 25 OF 52 ACCESION NUMBER: DOCUMENT NUMBER: TITLE: Supported catalyst for producing unsaturated esters from C3-C10 olefins , carboxylic acids, and oxygen in the S_{POS} phase Wunder, Friedrich A.; Quadflieg, Therese; Roscher, Guenther; Heck, Guenter Hoechst A.-G., Fed. Rep. Ger. Ger. Offen., 19 pp. CODEN: GWXBX	CAPLUS COPYRIGHT 2006 ACS on STN 1979-161909 CAPLUS 86:161909 Catalysts for organic acetate production Bayer A.-G., Fed. Rep. Ger. Jpn. Tokyo Koho, 4 pp. CODEN: JAXXAD Patent Japanese 1 PATENT INFORMATION:
PATENTEE(S):		PATENT NO.: 51025438	KIND: B4 DATE: 1967-02-17 APPLICATION NO.: JP 1967-521769 DATE: 19670818
PATENTEE(S):		PATENT NO.: 954529	KIND: A1 DATE: 19640910 APPLICATION NO.: CA 1964-901693 DATE: 19640527
PATENTEE(S):		PATENT NO.: 648814	KIND: A DATE: 19641204 APPLICATION NO.: BE 1964-648814 DATE: 19640504
PATENTEE(S):		PATENT NO.: 6406336	KIND: A DATE: 19641207 APPLICATION NO.: NL 1964-6336 DATE: 19640504
PATENTEE(S):			PRIORITY APPLN. INFO.: DE 1978-281121 DE 1978-0115 DE 2811211 DE 1970927 DE 1978-0115 DE 1963-F3909 A 19630604 DE 1963-F3909 A 19630604

Pd metal in an aqueous alkaline solution containing reducing agent. The carrier is then impregnated with alkali and/or alkaline earth metal acetates and dried to give a catalyst for gas-phase production of organic acetates from a mixture of olefins, O₂ and HOAc. Thus, Al2O3 catalytic carriers (80 mg/g surface area) were impregnated with aqueous PdCl₂ solution, then immersed in an alkaline NH₄ solution. The carriers contained 2 weight % Pd at this stage. The carriers were then impregnated with aqueous solution containing LiOAc (12 weight parts/100 weight parts final catalyst) and dried at 150° under vacuum to give catalysts. A 500 cm³ catalyst sample was then placed in a 1500 mm long tube (22 mm inner diameter) and a mixture of ethylene 2.08, HOAc 1.83, and O₂ 0.42 mol/hr was passed through the tube (at 135° and 1 atmospheric): 18% of the ethylene was converted with 87.3% of the products as vinyl acetate and 12.7% of the products as CO₂.

L5 ANSWER 26 OF 52 CAPIUS COPYRIGHT 2006 ACS ON STN
ACCESSION NUMBER: 197161905 CAPIUS
DOCUMENT NUMBER: 86:161905

TITLE: Silica catalytic supports
INVENTOR(S): Kawai, Kohichiro; Fujiwara, Yuzuru; Nakamura, Michihiko
Kurayasi Co., Ltd., Japan
Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JXXXAF
Patent
Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 52004490	A2	19770113	JP 1975-79804	19750627

PRIORITY APPN. INFO.: AB Sintered silica having a surface area of 150-600 m²/g, total pore volume of 0.3-3.0 ml/g, volume of 40-60 Å diameter pores 0.1-1.2 ml/g, volume of 800-1500 Å diameter pores 0.1-0.5 ml/g, and bulk d. 0.2-0.5 g/ml is useful as catalyst carrier. The supports are especially useful for catalysts used for gas phase synthesis of unsatd. esters from olefins. Thus, Aerogel (from Fuji Davison Chemical Co.) was sintered 4 h at 900°, pulverized to give SiO₂ powder (4 μ average diameter, porosity 0.65 ml/g, surface area 210 m²/g, average micropore diameter 112 Å, bulk d. 0.50 g/ml), 5 kg of which was mixed with 9 L of aqueous 10 weight % Snooter-N (silica gel from Nissan Kagaku Kogyo K.K.), and the mixture was made into 5-mm-diameter spherical pellets, the pellets were dried at 100° (5 h) and sintered at 700° (4 h)

To give catalytic support whose surface area, total pore volume, small pore (40-60 Å) volume, large pore (1000-1300 Å) volume, bulk d., and compressive strength were 252 m²/g, 1.14, 0.6, 0.25 mL/g, 0.38 g/ml, and 14.0 kg/pellet, resp. The support was then impregnated with Pd 3.3, Au 1.5, and KOAc 30 g/L-silica, and vinyl acetate was synthesized from a mixture of ethylene 60, O₂ 10, HOAc 30 mol. l at 145°, space velocity 800/h (at 0°, 1 atm; at 1 atm: the rate of vinyl acetate production was 2.80 ton/m³-catalyst-day.

L5 ANSWER 27 OF 52 CAPIUS COPYRIGHT 2006 ACS ON STN
ACCESSION NUMBER: 197505969 CAPIUS
DOCUMENT NUMBER: 83:203969

TITLE: Carboxylic acid ester

INVENTOR(S): Onoda, Takeru; Wada, Keisuke; Otake, Masayuki
Mitsubishi Chemical Industries Co., Ltd., Japan
Ger. Offen., 22 pp.

CODEN: GRXXBX

Patent

DOCUMENT TYPE:

FAMILY ACC. NUM. COUNT: 1

LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2510089	A1	19750918	DE 1975-2510089	19750307

JP 50121191

JP 56034345

JP 51008188

JP 56021463

NL 7502572

FR 2263399

GB 1462749

INFO.:

PRIORITY APPN. INFO.:

ANSWER 28 OF 52 CAPIUS COPYRIGHT 2006 ACS ON STN

ACCESSION NUMBER: 1975-98814 CAPIUS
DOCUMENT NUMBER: 82:98874

TITLE: Carbon-chain polymers

INVENTOR(S): Ponomariova, T. P.; Ponomareva, T. I.; Matkovich, P. E.; Raspopov, L. N.; Rozenberg, B. A.; D'yachkovskii, F. S.

PATENT INFORMATION:

PATENT ASSIGNEE (S):	SOURCE:	DOCUMENT NUMBER:	DOCUMENT TYPE:	LANGUAGE:	FAMILY ACC. NUM. COUNT:	PATENT INFORMATION:
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U.S.S.R. From: Otdryiya, Isobet., Prom. Obraztzy, Tovarnyye Znaki 1974, 51(33), 74.

CODEN: ORXXAF
Patent

Russian

1

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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SU 442187

PRIORITY APPN. INFO.:

In melt, solvent, or gas phase polymerization of α-olefins, especially with dienes, the presence of an organic metallic compound, polymer yield was improved when the catalyst support was hydrolyzed styrene-vinyl acetate copolymer [15213-29-0]. The catalysts contained a Group I-III compound and a Group IVa-VI or VII transition metal compound

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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SU 1972-1552733

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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SU 1972-1552733

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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A 19721130

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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82:90466

PATENT NO.:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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Catalyst for gaseous production unsaturated esters containing titanium (oxide), palladium, alkali metal carboxylate and a carrier.

Nakanura, Seishiro; Kushida, Koichi; Yasui, Akio
Kurayasi Co., Ltd.

Jpn. Tokkyo Koho, 3 pp.

(CA '78: 57793a).

CODEN: JAXXAD
Patent

DOCUMENT TYPE:

Japanese

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 4903809	B4	19740816	JP 1972-17673	19720221
AB	A catalyst for gas-phase ester manufacture contains 0.1-10 Pd metal, 0.1-20 alkali metal carboxylate, and 0.01-50 weight % Ti metal or oxide, with optional Au or Ag additives, on an active C, Al ₂ O ₃ , SiO ₂ , or aluminosilicate carrier . The Ti is added to the known Pd catalyst by conventional methods, giving greater tolerance to severe reaction conditions. The esters , e.g., vinyl acetate, are prepared by reaction of alkene with carboxylic acid and oxygen at 80-200° under 1-10 atmospheric pressure.	JP 1972-17673	JP 1972-17673	19720221

L5 ANSWER 30 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1974:412587 CAPLUS
DOCUMENT NUMBER: 81:12387
TITLE: **Organic esters**
INVENTOR(S): Nakamura, Seishiro; Yasur, Teruo
Kuraray Co., Ltd.
SOURCE: Jpn. Kokai Tokyo Koho, 6 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 48103509	A2	19731225	JP 1972-35553	19720407
JP 56052008	B4	198111209	JP 1972-35353	A 19720407

AB **Olefins**, **esters** of unsatd. ales., or alkylbenzenes were treated with O and carboxylic acids to give organic **esters** in the presence of a Pd catalyst on a **carrier**, in which the volume of pores having a diameter \geq 1000 Å occupied \geq 80% of the total volume of pores. Thus, a gas mixture containing butadiene, O, AcOH, and N (30:10:20:40) was passed at 140° and 5 l./hr over a Pd catalyst on an alumina **carrier**, in which the volume of pores occupied 98% of the total pore volume, to give 1,4-diacetoxy-2-butene (I), 3,4-diacetoxy-1-butene (II), butadienylacetate (III), resp., at 52, 2, and 3 g/catalyst/1 hr after 1 hr reaction. Similarly, with a silica **carrier** methacryl acetate and 2-methylene-1,3-diacetoxy-propane were formed from a mixture of isobutylene, O, AcOH, and N. Also, 1-butene, 2-butene, AcOH, and air gave I, II, 3-acetoxy-1-butene, 1-acetoxy-2-butene, and III. Similarly, 1-acetoxy-2-butene, AcOH, O, and N gave I, II, and III.

L5 ANSWER 31 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 80:1127889 CAPLUS
DOCUMENT NUMBER: 80:1127889
TITLE: Identification of hydroxy(acetoxy) alkanes by gas liquid chromatography combined with ir and NMR spectroscopy
AUTHOR(S): Nikitina, N. S.; Mysak, A. E.; Veretanova, T. N.; Tikhonov, V. P.; Lebedev, E. V.
CORPORATE SOURCE: Vses. Nauchno-Issled. Proektno-Konstr. Inst. Netopererab. Neftekhim. Prom., Kiev, USSR
SOURCE: Neftopererabotka i Neftekhimika (Kiev) (1973), No. 9, 88-91
CODEN: NEFBY; ISSN: 0548-1406
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB During the preparation of C8-18 1,2-alkanediols (I) from a-

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 1972-17673	JP 1972-17673	19720221	19720221	19720221
AB	A catalyst for gas-phase ester manufacture contains 0.1-10 Pd metal, 0.1-20 alkali metal carboxylate, and 0.01-50 weight % Ti metal or oxide, with optional Au or Ag additives, on an active C, Al ₂ O ₃ , SiO ₂ , or aluminosilicate carrier . The Ti is added to the known Pd catalyst by conventional methods, giving greater tolerance to severe reaction conditions. The esters , e.g., vinyl acetate, are prepared by reaction of alkene with carboxylic acid and oxygen at 80-200° under 1-10 atmospheric pressure.	JP 1972-17673	JP 1972-17673	19720221

L5 ANSWER 32 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1974:15437 CAPLUS
DOCUMENT NUMBER: 80:1137
TITLE: Unsaturated **esters**
INVENTOR(S): Saito, Toshihiko; Takano, Misao; Moriyma, Shigeru; Murayama, Hiroshi
PATENT ASSIGNEE(S): Tekkosha Co., Ltd.
SOURCE: Jpn. Kokai Tokyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 48049711	A2	19730713	JP 1971-84699	19711027
JP 52029294	B4	19770801	JP 1971-84699	19711027

PRIORITY APPN. INFO.: AB Vapor phase reaction of a lower unsatd. hydrocarbon with an acid in the presence of O over a palladium [7440-05-3] and gold [7440-57-5] catalyst optionally containing uranium [7440-61-1] and supported on a zinc spinal, gave unsatd. **esters**. Thus, Al₂O₃ was saturated with aqueous Zn(NO₃)₂ solution and heated to form a spinal which was soaked with aqueous HCl containing PdCl₂, AuCl₃, and U(OAc)₃. The treated spinal was treated further with alkaline NaH₂O₂ and aqueous AcOK.

Pd 1, Au 0.1, U 0.1, and AcOK 4.7 weight %. A mixture of propylene [115-07-1] 0.914, O 0.44, and acetic acid [64-19-7] 0.53 mole/hr was passed over the catalyst at 160.deg. to give allyl acetate [591-87-7]. Vinyl acetate [108-05-4], vinyl propionate [105-38-4], and allyl propionate [2408-20-0] were similarly prepared

L5 ANSWER 33 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1972:526021 CAPLUS
DOCUMENT NUMBER: 77:126021
TITLE: Silica supports for palladium catalysts for olefin oxacyclation
INVENTOR(S): Fernholz, Hans; Wunder, Friedrich; Schmidt, Hans Joachim Farberweke Hoechst A.-G.
PATENT ASSIGNEE(S): Ger. Offen., 12 pp.
SOURCE: CODEN: GMXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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DE 2100778	A	19720720	DE 1971-2100778	19710106
DE 2100778	B2	19771117	NL 1972-13	19720103
NL 7200013	A	19720111	ES 1972-398552	19720103
ES 398552	A	19740816	ZA 19720927	19720104
ZA 7200037	A	19730705	AU 1972-37544	19720104
AU 7237544	A1	19730705	-----	-----

IT 946346 A 19730521 IT 1972-19094 19720105
 CH 555797 A 19741115 CH 1972-111 19720105
 CH 164760 P 19740411 HU 1972-H01447 19720105
 GB 1313272 A 19741106 GB 1972-636 19720105
 SU 510991 D 19760415 SU 1972-1735287 19720105
 AT 312571 B 19740110 PT 1972-115 19720105
 PL 82922 P 19751031 PL 1972-12807 19720107
 SE 1793264 P 19770321 CS 1972-103 19720107
 CS 1176180 P 19770630 NO 1972-29 19720107
 NO 156925 B 19770822 JP 1972-4556 19720107
 JP 5100521 B4 19820129 BE 1972-12706 19720107
 BE 777880 A1 19720710 FR 1972-611 19720110
 FR 2121633 A5 19720825 B1 19770715 RO 1972-63312 19721006
 RO 56837 P 19750915 P 1973-312686 19730622
 US 3393199 A 19760217 US 1971-25901 A2 19710106
 PRIORITY APPLN. INFO.: US 1971-21005 A 19710108
 AB Pd catalyst supports for the manufacture of RIC02R (R = CH₂:CH, CH₂:CH₂, or CH₂:CMeCH₂; R₁ = Me or Et) from RH and RIC02H in gas phase in the presence of SiO₂ (sp. surface area 205 m²/g, pore volume 0.95 ml/g, and <10% pores of diameter <30 Å). Thus, 850 g. C₂H₄/hr, 75 l. O₂/hr and 810 g HOAc/hr were passed over a catalyst (from 1 l. of above support, Pd acetate 10.7, Cd(OAc)₂ 1.9, and AcOK 20 g) to give 305 g MeC0CH₂/hr as compared with 220 g/hr for SiO₂ supports of sp. surface area 160 m²/g, pore volume 0.73 ml/g, and pellet size 6 mm.

L5 ANSWER 34 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
 DOCUMENT NUMBER: 1970-467084 CAPLUS
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:
 PATENT NO. DATE APPLICATION NO. DATE
 DE 1808610 A 19700611 DE 1968-1808610 19681113
 DE 1808610 B2 19740822
 DE 1808610 C3 19750410
 CH 517692 A 19720115 CH 1968-517692 19691030
 BR 6913955 A0 19730315 BR 1968-233955 19691106
 NL 6916848 A 19710515 NL 1969-11848 19691107
 GB 1250265 A 19711020 GB 1968-1250265 19691107
 CS 164835 P 19751128 CS 1968-7395 19691110
 ES 373419 A1 19711216 ES 1968-373419 19691111
 AT 289742 B 19710510 AT 1968-16069 19691112
 SE 371433 B 19741118 SE 1968-15523 19691112
 NO 132864 B 19751013 NO 1968-4866 19691112
 RO 59890 P 19760615 RO 1968-61551 19691112
 BE 741636 A 19700513 BE 1968-711636 19691113
 FR 2024839 A5 19700903 FR 1968-38989 19691113
 JP 5100485 B4 19760625 JP 1968-91062 19691113
 PRIORITY APPLN. INFO.: DE 1968-1808610 A 19681113
 AB Vinyl acetate (I), propionate, or isobutyrate and alkyl acetate are prepared from olefins, C₂-20 aliphatic and aromatic carboxylic acids and mol. o with a metal ion catalyst and catalyst activators.

Thus, a carrier of silicic acid globules was ground in a solution of PdCl₂ and NaCl₄, dried, and treated with aqueous hydrazine hydrate. A gaseous mixture of AcOH, N₂O, and C₂H₄ was preheated with KOH and NaOC on silicic acid and passed over the heated catalyst to give a condensate containing 91% I. This method gave 7.1% C₂H₄ conversion and high catalyst efficiency, while a method in which the gas mixture was not pretreated with HOAc and NaOC gave lower catalyst efficiency and 0.23% C₂H₄ conversion.

L5 ANSWER 35 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
 DOCUMENT NUMBER: 1970-45664 CAPLUS
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:
 PATENT NO. DATE APPLICATION NO. DATE
 DE 1806118 A 19700618 DE 1968-1804347 19681022
 DE 180347 C3 19730222
 SU 438116 D 19740730 SU 1969-1362726 19690917
 NL 6915303 A 1970424 NL 1968-15303 19681009
 AT 289740 B 19710510 AT 1969-9857 19681020
 ZA 6907398 A 19710331 ZA 1969-7398 19681021
 GB 1235632 A 19701616 GB 1969-1235632 19681021
 BE 740637 A 1970422 BE 1968-40637 19681022
 FR 2030060 A5 19701030 FR 1968-36257 19681022
 PRIORITY APPLN. INFO.: DE 1968-804347 A 19681022
 AB Unsat. esters of carboxylic acids were prepared by reaction of O and a Pd catalyst at 180-90°/8 atmospheric. Thus, 1350 g SiO₂ carrier of 0.1-0.2 mm particle size was mixed with 16.1 g PdCl₂ and 5.85 g NaCl₄, solution, mixed with 125 g EtCO₂ in H₂O, and dried at 40-60° in vacuo to give a catalyst containing 1% Pd, 0.4% Au, and 3% K. A gas containing 64% ethylene, 16% EtCO₂, 8% O, and 12% CO₂ was passed over the above fluidized bed catalyst at 190°/8 atm at 34 cm/sec and 4.1 sec contact time to give 92% EtCO₂:CH₂ based on 8.5% ethylene reacted. Similarly prepared were 91% iso-PrCO₂:CH₂, based on 6.5% ethylene reacted, and 85% AcCO₂:CH₂, based on 5.2% CH₂:CHMe reacted, resp.

L5 ANSWER 36 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
 DOCUMENT NUMBER: 1969-513096 CAPLUS
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:
 PATENT NO. DATE APPLICATION NO. DATE
 DE 1808610 A 19700611 DE 1968-1808610 19681113
 DE 1808610 B2 19740822
 DE 1808610 C3 19750410
 CH 517692 A 19720115 CH 1968-517692 19691030
 BR 6913955 A0 19730315 BR 1968-233955 19691106
 NL 6916848 A 19710515 NL 1969-11848 19691107
 GB 1250265 A 19711020 GB 1968-1250265 19691107
 CS 164835 P 19751128 CS 1968-7395 19691110
 ES 373419 A1 19711216 ES 1968-373419 19691111
 AT 289742 B 19710510 AT 1968-16069 19691112
 SE 371433 B 19741118 SE 1968-15523 19691112
 NO 132864 B 19751013 NO 1968-4866 19691112
 RO 59890 P 19760615 RO 1968-61551 19691112
 BE 741636 A 19700513 BE 1968-711636 19691113
 FR 2024839 A5 19700903 FR 1968-38989 19691113
 JP 5100485 B4 19760625 JP 1968-91062 19691113
 PRIORITY APPLN. INFO.: DE 1968-1808610 A 19681113
 AB Viny acetate (I), propionate, or isobutyrate and alkyl acetate are prepared from olefins, C₂-20 aliphatic and aromatic carboxylic acids and mol. o with a metal ion catalyst and catalyst activators.

and submitted to mild alkaline hydrolysis to yield the major acid, cyclocapromonic acid, C15H22O2 (I, R = CO₂H) (II), m. 151.5-2.5°, [α]_D19D -14.7° (C 1.25, C1C13), and the minor acid epicyclo-copacromonic acid (I, R = CO₂H) (III), m. 161.0-8.5°, [α]_D20-5D 78.3° (C 3.6, C1C13).

Spectral and chemical evidence indicated that I are saturated tetracyclic compds. with one secondary and 2 tertiary Me groups with a probable tricyclene carbon framework, both derived from the same parent hydrocarbon I (R = Me) (IV). The mixed acids treated with Pb(OAc)₄-LiCl followed by dehydrochlorination of the epimeric Cl derivs. (I, R = Cl) gave a mixture of geometrically isomeric **olefins** (V). The N.M.R. chemical shift of the values for the secondary Me group in the spectra of the Cl derivs. and V showed the existence of the >CH₂CO₂H group in II and III. V hydroxylated and submitted to glycol cleavage gave a single cyclic ketone (VI), ν 1701, 1420 cm.⁻¹. The Baeyer-Villiger oxidation of VI afforded an ε-lactone, C12H16O₂, m. 109-11°, subsequently transformed into an oxo **carboxylic acid** (VII), C12H16O₃, m. 114.0-15.5°, by saponification followed by Jones oxidation. The spectral properties of VII and its Me **ester** verified the tricyclane structure and it was presumed that the C skeleton of I and II, including the 3-carbon side chain would be that of cyclosativen (VIII, R = iso-Pr, R₁ = H) (IX). According to the reaction sequence: -CO₂Me → -CH₂OH → -Me, II and III gave the same hydrocarbon IV whose ir and N.M.R. spectra indicated stereoisom-erism with IX with respect to the iso-Pr group, a supposition confirmed by conversion of II and III to IX by deacetylative acetylation to I (R = OAc) with Pb(OAc)₄; hydrolysis with alc. KOH followed by Jones oxidation to VIII (R = H, R₁ = Ac); epimerization with NaOMe to yield the isomer VIII (R = Ac, R₁ = H); and Wittig reaction with Ph₃P=CH₂ to VIII (R = Me-C₂H₅, R₁ = H), followed by catalytic hydrogenation over (Ph₃P)₃RhCl as catalyst. The resulting hydrocarbon C15H₂₄, [α]_D20D 67.8° (C 1.15, C1C13), M_r204 was spectroscopically identical with (-)-cyclosativen (IX), [α]_D94.1°, leading to the structures of II and III. The strongly pos. sign of the Cotton effect in the O.R.D. of VI supported the absolute stereochemistry of the C skeleton of VI.

15 ANSWER 37 OF 52 CAPIUS COPYRIGHT 2006 ACS ON STN

1969:402987 CAPIUS
ACCESSION NUMBER: 71:2987

TITLE: Esters of unsaturated alcohols
INVENTOR(S): Capp, Clifford W.; Durston, Peter J.
PATENT ASSIGNEE(S): BP Chemicals (U.K.) Ltd.
SOURCE: Brit., 2 pp.
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1148583	---	---	19690416	19660625
AB	Vinyl acetate (I) is manufactured by combining C2H ₄ , O, and AcOH in the vapor phase at elevated temps. in the presence of Pd deposited on Al ₂ O ₃ , Fe oxide, or Al Mg spinel supports . The exhausted catalysts are reactivated by treatment in 2N NaOH. Thus, 9-16-mesh Al ₂ O ₃ was treated with 1:1 PdCl ₂ -HCl solution, dried at 140°, and reduced with alkaline NaH to yield 2% Pd/al ₂ O ₃ catalyst (II). C2H ₄ 0.29, O 0.06, and AcOH 0.14 mole/l/hr. were combined at 140° in the presence of II to yield 0.21 mole/l/hr. I after 4 hrs. and 0.13 mole/l/hr. for the next 190 hrs., before falling to 0.02 mole/l/hr. after 217 hrs. The spent II was treated with 3 successive ams. of 2N NaOH, followed by 6 successive washings with cold H ₂ O, and drying at 140° to give a reactivated-II that yielded 0.18 mole/l/hr. I. For the next 236 hrs. Uses of other			

Pt-group metals on aluminosilicates, heavy metal oxides, metal oxide-Al₂O₃ complexes, carbon, or pumice, and catalyst reactivation with aqueous solns. of KOH, Na₂CO₃, or K₂CO₃ and alc. solns. of Na-(or K) methoxide or methoxide, were claimed.

15 ANSWER 38 OF 52 CAPIUS COPYRIGHT 2006 ACS ON STN

ACCESSION NUMBER: 1969:116669 CAPIUS
DOCUMENT NUMBER: 70:116669

TITLE: Finely divided metals of the platinum group
PATENT ASSIGNEE(S): Monsanto Co.

SOURCE: BRXXXA
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1146530	---	19690326	GB 1966-22105	19650518
DE 1533102	---	---	DE	CH
AB	A method of producing finely divided metals of the Pt group, the products obtained, supported catalysts made therefrom and their use for hydrogenation and dehydrogenation are described. The finely divided metal is obtained by reducing a solution of a salt of the metal in the presence of an olefin, acetal, ketone, ether, carboxylic acid ester , or olefin , which has a reducing action on the salt and forms a soluble complex with the metal, by the action of H ₂ on the solution in the absence of a borohydride, or by thermally decomposing the complex, thereby producing the metal in a zero-valent state. The process may be carried out in the presence of a nonreducing solvent for the metal salt. Particularly suitable reducing agents (solvents) for this process are the cyclic ethers, especially propylene oxide. In carrying out the treatment with H ₂ , the solution may be preheated. The thermal decomposition of the complex may be effected before or after removal of excess reducing agent and may occur slowly at room temperature; usually it is sufficient to heat the solution for 10 to 120 min. up to 90° to obtain a quant. suspension of the Pt. metal. The finely divided Pt metals can be deposited on supports , especially Al ₂ O ₃ which have been subjected to phy. or chemical pretreatment such as glowing, action of acids, or with superheated H ₂ O-vapor. The metals are established on the support by steeping or by pouring the solution onto the support . Solvent is then removed in vacuo at the room temperature with effective stirring. The metal compound which remains on the support contains enough, probably complex-linked, reducing agent to give the zero-valent metal on heating up to higher temps. (e.g., to 150-250° for hydrogenation catalysts) preferably under reduced pressure. For example, to prepare finely divided Pt on a support , the pulverized or granulated support is heated in a vacuum (0.004 mm.) at 150° for 2 hrs. The Pt salt is subject to the same treatment. A solution containing (1-2) + 10-2 mole Pt salt/mole solution is prepared in an atmospheric of Ar by using the cited reducing agent. The solution is slowly added, with cooling, either to the cooled powdery support or to the granulated support previously freed of air by evacuating until the carrier mass is well saturated with it. The excess solvent is distilled immediately with stirring in a vacuum at 25° and the catalyst is heated in the vacuum at the indicated aftertreatment temperature for 1 hr. After cooling the catalyst to room temperature, the catalyst is used approx 24-48 hrs. later. The activities of such catalysts prepared with different reducing agents and			

supports are tabulated.

15	ANSWER 39 OF 52	CAPIUS	COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:	1969:105966	CAPLIUS	
DOCUMENT NUMBER:	70:103986		
TITLE:	Carboxylic acids and their unsaturated esters		
INVENTOR(S) :	Sennwald, Kurt; Vogt, Wilhelm; Erpenbach, Heinz;		
PATENT ASSIGNEE(S) :	Glaeser, Hermann		
SOURCE:	Knapsack A.-G. S. African, 18 pp. CODEN: SFXXAB		
DOCUMENT TYPE:	Patent		
LANGUAGE:	English		
FAMILY ACC. NUM. COUNT:	1		
PATENT INFORMATION:			
PATENT NO.	KIND	DATE	APPLICATION NO.
ZA 6802010	-----	19680829	DE 19680322
FR 1618591	DE	-----	FR 19680322
FR 1567312	FR	-----	FR 19680322
GB 1189091	GB	-----	GB 19680322
RO 52442	RO	-----	RO 19680322
US 3631079	US	197111228	US 19670405
PRIORITY APPN. INFO.:			
AB	An aldehyde is partially or completely substituted for its corresponding acid in the gas -phase reaction of an olefin , the carboxylic acid , and O in contact with a Pd-containing carrier catalyst at elevated temperature to give an unsatd. ester of the acid. The aldehyde is simultaneously oxidized in the process, thus reducing the cost of oxidation of the aldehyde to the acid in an addnl. step. Thus, the catalyst was prepared by impregnating 1 kg. of a ball-shaped silicic carrier with aqueous solution of 8 g. PdCl ₂ and 3 g. H ₂ O ₂ , drying the mixture with agitation, pouring into a 4-5% H ₂ NNH ₂ .H ₂ O solution at 40°, and, after reduction was complete, pouring off the supernatant liquid, washing the catalyst with distilled H ₂ O, impregnating with 15% aqueous KOAc solution, decanting the solution, and drying the catalyst under reduced pressure at 60°. The catalyst (1 l.) was placed in a steel tube, and 500 1./hr. C ₂ H ₄ , 500 g./hr. HOAc, and 25 g./hr. Ach was passed over the catalyst at 6 atm. atmospheric absolute. The reaction gas was cooled to 0° to give a mixture comprising 70% (428 g.) HOAc, 23.4% vinyl acetate, 6.45% H ₂ O, and approx. 0.2% Ach. Approx. 32.1 g. fresh HOAc was formed by Ach oxidation, and approx. 0.9 g. of the HOAc obtained by oxidation reacted. Vinyl isobutyrate was similarly prepared		
15	ANSWER 40 OF 52	CAPIUS	COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:	1969:96179	CAPLIUS	
DOCUMENT NUMBER:	70:96179		
TITLE:	Vinyl acetate from saturated organic acids and olefins		
PATENT ASSIGNEE(S) :	Stamicarbon N. V. Addn. to Neth. Appl. 66 08559		
SOURCE:	Neth. Appl., 7 pp.		
DOCUMENT TYPE:	Patent		
LANGUAGE:	Dutch		
FAMILY ACC. NUM. COUNT:	1		
PATENT INFORMATION:			
PATENT NO.	KIND	DATE	APPLICATION NO.
NL 6706640	-----	19681113	NL 19670512
DE 1643077	DE	-----	DE 19670512

GB	GB 1154517	Catalysts useful for preparing unsatd. esters from saturated organic acids, olefins , and mol. O are prepared by impregnating a carrier with a solution of a Pd salt and Pt, or Rh salt, and then drying, hydrolyzing, and reducing the impregnated carrier mass. Thus, catalysts are prepared by impregnating Al2O3 with salts of Pd and Pt salts. The impregnated mass is then dried, hydrolyzed by treatment with boiling NaHCO ₃ solution, and reduced. These catalysts are used in the synthesis of vinyl acetate (I) by passing 120 l./hr./l. of catalyst of a 1:1:0.4 molar C ₂ H ₄ -HOAc- gas mixture over the catalyst at 1 atmospheric pressure. For example a catalyst containing 2.0% Pd and 0.02% Pt gave a C ₂ H ₄ conversion of 31.6 mole % and an 89% yield in 1 day and 29.8 and 91%, resp., in 18 days. A catalyst containing 2.0% Pd and no Pt gave 15.1% conversion and 92% yield in 1 day and 7 and 90%, resp., in 4 days at 118°. A catalyst containing no Pd and 3.0% Pt gave resp. values of 10. and 9% in 1 day at 111°. Best results (42.5 and 88%, resp.) were obtained with 2.2% Pd and 0.05% Pt in 1 day at 120°. A catalyst containing Rh was also used. These catalysts have excellent retention of activity over long operating times, and give good conversions to the desired product.	AB
L5	ANSWER 41 OF 52	CAPLIUS	COPYRIGHT 2006 ACS on STN
	ACCESSION NUMBER:	1969:96171	CAPLIUS
	DOCUMENT NUMBER:	70:96171	
	TITLE:	Gas-phase synthesis of vinyl esters from ethylene, oxygen, and carboxylic acids with a palladium-alkali metal acetate catalyst	
	PATENT ASSIGNEE(S) :	Kurashiki Rayon Co., Ltd.	
	SOURCE:	Brit., 10 pp.	
	DOCUMENT TYPE:	CODEN: BRXXXA	
	LANGUAGE:	Patent English	
	PATENT INFORMATION:		
	PATENT NO.	KIND	APPLICATION NO.
	-----	-----	-----
	DE 1142250	-----	GB 1966-56274
	DE 1168339	-----	DE 19661215
	FR 1520433	-----	FR 19690205
	US 3367767	-----	US 19710302
	PRIORITY APPN. INFO.:		
AB	Vinyl esters were prepared by continuous gas phase synthesis from C ₂ H ₄ , O, and an organic carboxylic acid , using a catalyst system having an improved and high catalytic activity and which minimizes the rate of loss of its catalytic activity by performing the reaction under a low partial pressure of O and organic carboxylic acid . Thus, bead alumina having 99.3% Al ₂ O ₃ , a 210 m ² /g. surface area, and 10-14 mesh were calcined 3-5 hrs. in air at 550-1300°. The bead alumina was prepared by adding 175 g. CaCO ₃ wetted with 30°C. water to a solution of 342 g. Al ₂ (SO ₄) ₃ dissolved in 800 cc. water. CO ₂ was generated and CaSO ₄ was precipitated. CaSO ₄ was filtered to give Al2O3.1-Al ₂ O ₃ (I). The liquid had 3.38 pH. I was dropped through an 85° heated glass tube to give a gel, which was purified and calcined 5 hrs. at 800°. The calcined carrier (35 parts) was added to 50 parts water containing 0.3 part HCl and 1.3 part PdCl ₂ and the system dried. PdCl ₂ was reduced by dropping a reducing liquid on the dried catalyst system. The liquid was prepared by adding 2.5 parts of 80% hydrazine hydrate solution to 50 parts NaOH solution. The reduced catalyst was water-washed and placed in 10 parts water containing 0.7 parts AcOH and dried. The catalyst (35 g.) was placed in a glass tube heated to 110° and a gaseous mixture containing C ₂ H ₄ , O, AcOH (1:1.2 molar ratio) was passed over the catalyst at 81.1 hr. In an experiment, where the calcination temperature for the carrier was 900° and the surface area of the carrier was 150 m ² /g., the production rate of vinyl acetate (II) was 40.1 g. II/1. /catalyst hr., the II selectivity, 94%, and AcH selectivity, <0.1.		

L5 ANSWER 42 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:27122 CAPLUS
 DOCUMENT NUMBER: 64:27122
 ORIGINAL REFERENCE NO.: 61:4949d-e
 TITLE: Ethylenically unsaturated **esters**
 PATENT ASSIGNEE (S): Pullman Inc.
 SOURCE: 5 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:
 PATENT NO. KING DATE APPLICATION NO. DATE

 GB 1007815 ----- 1965/022 1960/1223
 PRIORITY APPLN. INFO.: US
 AB **Olefins** halogenated on one of the doubly bound C atoms react in liquid or vapor phase, under anhydrous conditions, with carboxylic acids in the presence of halides of Group VIII metals to form unsatd. **esters**. The halides may be used in combination with a support **carrier**, or diluent, such as alumina, silica gel, and alundum. The greater the ratio of the catalyst to olefin reactant the faster the rate of reaction. Reaction takes place between 70 and 300°, and mostly at the atmospheric pressure. Thus, 3.56 g. Pdc12 and 11.36 g. Na2HPO4 is kept for 2-4 days in vacuo at 37° F., cooled to room temperature, 50 cc. of isooctane added, and the vessel flushed with vinyl chloride at 720 mm. with shaking. The reaction vessel is charged with 3.76 g. AcOH and shaken at room temperature for 4 hrs. The yield of vinyl acetate is 2.6 mole-% on the basis of Pdc12.

L5 ANSWER 43 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1996:26837 CAPLUS
 DOCUMENT NUMBER: 64:26337
 ORIGINAL REFERENCE NO.: 64:48879-h,4888a-h,4889a
 TITLE: Solvolytic rearrangement of the 2-(1-cyclopentenyl)ethyl system
 AUTHOR(S): Closson, W. D.; Kwiatkowski, G. T.
 CORPORATE SOURCE: Columbia Univ.
 SOURCE: Tetradron (1965), 21(10), 2779-89
 CONEN: TETRAB; ISSN: 0040-4020
 DOCUMENT TYPE: Journal
 LANGUAGE: GI For diagram(s), see printed CA issue.
 AB cf. CA 62, 6357d. The acetolysis of 2-(1-cyclopentenyl)ethyl bromobenzene-sulfonate (I) was investigated. Reduction of 1-cyclopentenylacetic acid in tetrahydrofuran with LiAlH4 yielded 90% 2-(1-cyclopentenyl)ethanol (II). b3 65-6°, n2D 1.4781. Similar reduction of cyclopentylacetate acid gave 98% yield of 2-cyclopentylethanol (III), b3 77-8°. Conversion of 17 g. II gave 10 g. of the corresponding bromide, b0.5 43-4°. HOCH2CHOH heated 2.5 hrs. at 100° and 70 millimoles KCN in 25 ml. HOCH2CHOH heated 2.5 hrs. at 100° and the cooled solution poured into saturated aqueous NaCl, extracted with Et2O, and the residue on evaporation heated 20 hrs. at 95° in 200 ml. 20% aqueous KOH, the cooled solution washed with aqueous HCl, extracted with Et2O, and the isolated 3-(1-cyclopentenyl)propionic acid, (2.5 g., m. 58-61°) reduced with LiAlH4 in tetrahydrofuran yielded 84% 3-(1-cyclopentenyl)-propanol (IV), b3 66-7°. Preparation according to Alibisetti, et al. (CA 51, 1041d) gave 3-methylenecyclohexanol (V), b43 97.5-8.0°. Zn-Cu couple (12 g.) in 30 ml. dry Et2O and 11.6 millimoles 2-methylenecyclopentanol in 7 g. CH2Cl2 stirred 16 hrs. and diluted with 5 ml. saturated aqueous NH4Cl, the organic layer and Et2O washings washed, dried, and concentrated and the residual oil kept 16 hrs. in 10 ml. saturated MeONa

under N₂ poured into saturated aqueous NaOH, and extracted with Et2O yielded spiro[2.4]heptan-4-ol (VII), b27 75-8°. Similar conversion of 1-cyclopentenylmethanol gave 45% yield of bicyclo[3.1.0]hexane-1-methanol (VIII), b40 96-8°; p-nitrobenzoate (VIII) m. 44-5°. Cyclonpropylcarbinol and Fmoc-NHCOC in C5H5N gave cyclcopropylcarbinol p-nitro-benzoate, m. 56-7°. Spiro[2.4]heptan-4-yl p-nitrobenzoate (IX) was prepared by Applequist and Landgrebe (CA 60, 13101d). Treatment of the appropriate alc. with the requisite sulfonyl chloride gave I (63%), 2-cyclopentylethyl p-bromobenzensulfonate (X, oil, 62%), 3-(1-cyclopentenyl)propyl p-bromobenzensulfonate (XI, m. 40-0.1°, 75%), I (33.2 millimoles) and 40 millimoles NaOAc in 500 ml. AcOH heated 2 hrs. at 100° and added to 11. H2O, extracted continuously with C5H12 and the extract slowly distilled to 250 ml. concentrate, submitted to analysis on an 8-ft. 1,2,3-tris-(2-cyanoethoxy)propane column at 125° to show the presence of 10% of mixture of 2 **olefins** (major constituent tentatively identified as 3-methylenecyclohexene, the remaining C5H12 evaporated and the acetate mixture (87.4% yield) reduced with LiAlH4 in Et2O gave a mixture of alcs., analyzed by **gas** chromatography to show the presence of VI 11.2, bicyclo[3.2.0]heptan-1-ol (XIII), 2, V 56.9, VII 6.2, and II 4.7%. XIII was identified by m.p. (42-3°) and ir and N.M.R. spectra, and showed a major peak at m/e 84, apparently due to loss of H2C:CH2. XII (4.14 millimoles) and 11 ml. 0.43M NaOAc-AcOH in 100 ml. AcOH heated 3 hrs. at 100° yielded 37% **olefins** (4:1 ratio), minor component probably 3-methylenecyclohexene and 63% 3-methylenecyclohexyl acerate (XIV). The rate of acetolysis at 80° was only 5.07 ± 0.05 + 10⁻⁵ sec.⁻¹, about half that of cyclohexyl tolylsulfonate (10.7 + 10⁻⁵ sec.⁻¹) under the same conditions. IX (0.23 millimole) and 0.40 millimole 2,6-lutidine in 25 ml. 60% aqueous Me2CO heated 4 hrs. at 100° in a glass ampul, the Me2CO evaporated, and the aqueous solution extracted with Et2O, washed (cold dilute HCl, aqueous Na2CO3), and the dried extract concentrated to 4 ml., examined by **gas** chromatography to show the presence of 60.6% VI, 25.4% XIII, and 14.5% V, and evaporated gave an oil; ir spectrum (contd. bands present in the ir spectra of each of the 3 alcs. XIII (4.5 millimoles) and 1 millimole p-O2NC6H4CO2H in 100 ml. 60% aqueous Me2CO heated 2.5 hrs. at 100° in a glass bomb gave a mixture containing 63.5-36.5 XIII-V. Solvolysis of 5.37 millimoles VIII with 8.72 millimoles 2,6-lutidine in 100 ml. 60% aqueous Me2CO 60 hrs. at 100° gave 2.5% olefin, 1.5% VI, 4.3% XIII, 82.8% V, and 8.9% VII. The rates of solvolysis of P-nitrobenzoate **esters** of IX, VIII, and related P-nitrobenzoate **esters** were tabulated. Acetolyses and ethanolyses were carried out by the ampul technique. All kinetic solns. were 0.036M in NaOAc and 0.030M in P-O2NC6H4CO2H. The aliquots were acidified with standard HCl04-AcOH and back-titrated with 0.020M NaOAc-AcOH (indicator) or 0.015M NaO-MeOH (ethanolyses), using bromothymol blue indicator. Rates of solvolyses of I, X, 2-(2-cyclopentyl)ethyl bromobenzene-sulfonate (XVI), and XI were tabulated. The ethanolysis rate of I was essentially that of 2-substituted ethyl brosylates X and XV. On changing to AcOH, the reactivity of I increased slightly, whereas that of X and XV decreased sharply. The insensitivity of I to change in nucleophilicity of solvents is fairly typical of systems that solvolyze with participation of double bonds. The lack of any significant difference in acetolysis rates between XI and XVI supported the conclusion that inductive effects were minor and that anchimeric acceleration in the acetolysis of I is only about 40-fold. Comparison with other primary homoalilic systems indicated that a better value for anchimeric acceleration in the 2-cyclopentenylcarbinyl system is 50-60 fold. The enhanced rate and production of rearranged products on acetolysis of I clearly indicated participation of the double bond but direct ionization to an intermediate cation capable of yielding all of the

rearranged acetates seemed unlikely. The first-formed intermediate should account for the rate enhancement and the bicyclo[2.4.1]heptan-4-yl acetate (XVII) and bicyclo[3.2.0]heptan-1-yl acetate (XIX). The unrearanged 2-(1-cyclopentenyl)ethyl acetate (XX) probably came from a competing solvolytic displacement. The other two rearranged acetates, bicyclo[3.1.0]-hexane-1-methyl acetate (XXI) and XIV cannot be obtained from XVII and a bridged homoallylic ion (XXII) or a bridge cation (XXIII) were postulated as precursors with conversion to ion (XXIV) involving only minor changes in bond lengths and conformation. Accordingly the acetates of I was rationalized schematically as: I \rightarrow XVII .dabharw. XXII (or XXIII) \rightarrow XXIV (or XXVII) \rightarrow XIV. Other cations could also be present but the proposed scheme is sufficient to account for the products and to provide a reasonable explanation for the reactivities of the related systems. This general reaction class may have synthetic utility. The biol. extensive 2-(β -indolyl)ethyl system is analogous in many ways to the 2-(1-cyclopentenyl)ethyl structure.

L5 ANSWER 44 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1966:11686 CAPIUS
 DOCUMENT NUMBER: 64:111686
 ORIGINAL REFERENCE NO.: 64:2119e-h,2150c
 TITLE: Extension of sugar chains through acetylenic intermediates
 AUTHOR(S): Hoton, D.; Hughes, J. B.; Tronchet, J. M. J.
 SOURCE: Ohio State Univ., Columbus
 Chemical Communications (London) (1965), (20), 481-3
 CODEN: CCOMA8; ISSN: 0009-241X
 DOCUMENT TYPE: Journal
 LANGUAGE:
 OTHER SOURCE(S): CASREACT 64:11686
 GI For diagram(s), see printed CA Issue.
 AB Oxidation of 1,2:3,4-di-O-isopropylidene- α -D-galactopyranose with MeSO-N,N'-dicyclohexylcarbodiimide, followed by ethynylation of the resultant aldehyde gave the 6-epimeric mixture (I). The preponderant epimer (m. 130-1°) was reduced to the corresponding olefin, m. 106-08°. Similarly, ethynylation of periode-oxidized 1,2-O-isopropylidene- α -D-glucofuranose gave a mixture of 5-epimers, the D-glucos-epimer gave a crystalline 3,5-dibenzozate, m. 191-3°. Reduction of the latter to the olefin, m. 143-5°, followed by ozonolysis, reduction, and hydrolysis gave glucose. The 3-epimeric heptynes (II) formed by ethynylation of 2,3:4,5-di-O-isopropylidene-aldehydo-L-arabinose were separated by gas-liquid chromatography (g.l.c.) to give the D-gluc- isomer, m. 67-9°, [α]D²² 6.5° (CHCl₃) and the D-manno-isomer, [α]D²²-24° (CHCl₃), in 3:2 proportion: the structures were established by degradation. The 3-acetate of II was treated with bis(1,2-dimethylpropyl)borane (IV) in diglyme, followed by H₂O₂, to give the 2,3-trans-unsaturated aldehyde (III), b.p. 03-65°. Similarly, ethynylation of 1,2-O-isopropylidene-D-glyceraldehyde gave a 3:2 mixture of 3-epimeric pentone derivs., separable as the 3-acetates (V) by g.l.c. One epimer had [α]D²⁰ -41° (CHCl₃), and the other [α]D²⁰ 50° (CHCl₃). Treatment of V with IV, followed by H₂O₂, gave trans-2,3-dideoxy-4,-O-isopropylidene-aldehydo-D-Glycero-2-pentenoate, the 5-carbon analog of III. Structures given were supported by ir and N.M.R. data.

L5 ANSWER 45 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1964:084851 CAPIUS
 DOCUMENT NUMBER: 61:84951
 ORIGINAL REFERENCE NO.: 61:1439c-g
 TITLE: Modification of textile fiber properties by radiation-induced graft copolymerization Armstrong, Arthur A., Jr.; Walsh, William K.; Rutherford, Henry A.

SOURCE: U.S. At. Energy Comm. (1963), NCSC-2477-11, 132 pp.
 DOCUMENT TYPE: Journal
 LANGUAGE:
 AB The modification of fiber properties by exposure to radiation and by graft copolymerization (GP) is described. The radiation source was a 60Co γ -cell 220. The predominant effect of radiation on fibers was degradation. No improvement of the phys. properties of textile fibers by radiation alone was indicated. Vapor-phase GP to textile fibers initiated by γ radiation was investigated for (a) variables affecting the rate of GP; (b) modification of fiber properties by GP; and (c) kinetics and diffusion in the vapor-phase GP process. The higher effects of process variables on the rate of grafting were: (1) higher carrier-gas flow rates increased the rate of grafting; (2) the presence of a 3rd component (e.g. H₂O, MeOH, or AcOH) increased the rate of grafting to acetate and nylon, and was necessary for grafting to cotton, rayon, and wool; (4) O inhibited polymerization; (5) the rate of grafting depended on the fiber and the monomer; the order of reactivity for fibers was acetate > polypropylene > nylon > cotton > rayon > wool > polyester > acrylic; the order of reactivity of the monomers studied was Me acrylate > Et acrylate > acrylonitrile > butadiene > vinyl acetate > Me methacrylate > vinyl chloride > styrene; (6) chemical modification of the cellulose increased the rate of grafting to cotton; (7) the lifetimes of free radicals produced by irradiation were long enough to use post-irradiation techniques. Radiation-induced vapor-phase GP of vinyl monomers to textile fibers was studied as a means to improve fiber properties with the following results: (1) cotton was completely resistant to microorganism attack and had increased resistance to heat after grafting with acrylonitrile; (2) polypropylene fiber was dyeable with disperse dyes after grafting with vinyl acetate, Me acrylate, and Et acrylate; (3) nylon and polypropylene had improved weather resistance after grafting with styrene; (4) cotton cloth had improved crease recovery after grafting with allyl acrylate, followed by cross-linking by radiation and grafting with methylacrylamide; (5) nylon had increased dimensional stability at 230° after grafting with allyl acrylate.
 acrylic acid, or a combination of acrylic acid with a cross-linking monomer, and had 30-50% increased modulus after grafting with acrylic acid alone or in combination with a cross-linking monomer. A preliminary study of the effects of diffusion and kinetics on the vapor-phase GP of acrylonitrile to various textile fibers showed that the effects are complex and cannot be represented by simple math. solutions. Empirical relations were obtained which adequately represented the more complex cases.

L5 ANSWER 46 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1964:24794 CAPIUS
 DOCUMENT NUMBER: 60:22794
 ORIGINAL REFERENCE NO.: 60:4439b-d
 TITLE: Reaction gas chromatography
 AUTHOR(S): Drawert, Friedrich
 SOURCE: Abhandl. Deut. Akad. Wiss. Berlin, Kl. Chem., Geol.
 DOCUMENT TYPE: Journal
 LANGUAGE:
 AB A reactor is interposed between the carrier gas supply and the anal. column in which the sample is transformed chemically to yield better separation of alcs. and polyols in aqueous solution. If the reaction permits, the reactor tube can be placed in the oven compartment in series with the anal. column. A sep. thermostat is used for high-temperature reactions. H₂O can be removed by a C₄H₂ column ahead of the anal. column. Aqueous soins. of lower alcs. are acidified with either tartaric or oxalic acid and passed through a column containing a mixture of NaNO₂ and support material, or a NaVO₂-containing solution of the alcs. is passed through a reactor tube containing one of the acids. The nitrous acid

esters are separated much more readily than the alcs. When alcs., their mixture, or aqueous solns. are sprayed on hot acidic surfaces, yields the corresponding **olefins**, which can be readily separated by the method was used for blood alc. detns. Some alcs. can be determined by first hydrogenating over Raney Ni at 170-200° to the hydrocarbon. Bis(alkyl xanthogenatonickel(II)) complexes are split with dimethylglyoxime, and the alcs. liberated by acidification are determined by the **olefin** method. 2-Alkoxyl-2-mercaptopthiazolidines are readily converted to 2-mercaptopthiazolines by splitting off an alc. which is determined as above. Aqueous glycerol is converted by HI to iso-Pri, which is determined as propane by the hydrogenation method.

L5 ANSWER 47 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN

DOCUMENT NUMBER: 1963:19840 CAPIUS

ORIGINAL REFERENCE NO.: 58:29840

TITLE: 58:5018d-e

Gas-liquid chromatography of synthetic carboxylic acids and the corresponding alcohols

Vasilescu, V. Inst. Verfahrenstechnik Org. Chem., Leipzig, Germany

Abhandl. Deut. Akad. Wiss. Berlin, Kl. Chem., Geol., Biol. (1959), (No. 9), 136-53

Journal

Unavailable

AB The products of paraffin oxidns., namely C4-12 carboxylic acids and Cs-14 alcs. were separated by using high vacuum grease Number 20 (Car Zeiss) on ground Kaolin "MEKA" as a carrier. The carboxylic acids were converted to the Me esters with CH₂N2 and the alcs. were preferably acetylated before analysis.

L5 ANSWER 48 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN

DOCUMENT NUMBER: 1961:101313 CAPIUS

ORIGINAL REFERENCE NO.: 55:19704d-f

TITLE: Catalysts

Dowden, Dennis Albert; Caldwell, Alexander M. U. Patent

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. ----

KIND ----

DATE 19610328

APPLICATION NO. -----

DATE -----

AB Catalysts suitable for the oxidation of aromatic hydrocarbons, and other compds., such as paraffins and olefins, each with at least 3 C atoms, aldehydes which yield carboxylic acids, and ketones, to O-containing compds. are processed from molten catalytic vanadyl vanadates (single solid phase or a mixture of solid phases, each phase containing at least

1 of the metals Ti, Ag, K, Na, Li, or Rb, together with the oxides of V where part of the V atoms have a valency of 2 to 4) by impregnation onto a porous, heat-resistant, solid support, such as Al2O3, SiO₂, SiC, or firebrick. The preferred catalysts are supported Ti vanadyl vanadate and K; in these the M2O₅:V2O₅ molar ratio, where M is K or Ti, may be 0.01:1-0.3:1, but is conveniently 0.05:1. Thus, 1.29 g. Ti2CO₃ and 10 g. of V2O₅ were fused together and impregnated on particles of α -Al2O3 by dipping. A mixture of 21.2 g. α -xylene vapor and 480 l. air was passed over 50 ml. of the Ti vanadyl vanadate supported on α -Al2O3. At the operating temperature of 500°

the α -xylene was converted to phthalic anhydride with a conversion of 64.1% and a pass yield of 35.5%.

L5 ANSWER 49 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
DOCUMENT NUMBER: 1960:118497 CAPIUS
ORIGINAL REFERENCE NO.: 54:118497
TITLE:
AUTHOR(S): Stevens, Travis E.
CORPORATE SOURCE:
SOURCE: 3593-7
CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE:
LANGUAGE:
OTHER SOURCE(S):
AB When an excess of N2O4 was added in a dry N stream to an Et2O solution of camphene, the products isolated were: 5% dl- α -hydroxycamphenane (I), m. 64-5°; 35% 3-(nitromethyl)-3-hydroxycamphenane (II), m. 37-9°; 30% 3-(nitromethyl)-3-nitrocumphenane (III), m. 141-3°; and a trace of a nitrate ester, probably 2-nitro-10-nitrocumphane (IV). II (formed by the hydrolysis of 3-(nitromethyl)-3-nitrocumphenane) and III were the usual products of homolytic reaction of N2O4 with **olefins**. Treatment of I and II with a solution of KOH in 50% EtOH 30 min. gave I, 59 and 56%, resp. Similarly, base treatment of the crude camphene-N2O4 mixture gave I in 40% yield. With O as the **carrier gas**, the camphene-N2O4 reaction gave a mixture of products including 3-6% IV, 20-8% 3-isopropylidenecyclopentanecarboxylic acid (VI), m. 76-7°, 30% nitroacids of undet. structure, and a total of 6% II or III or both. The structure of V was established by its base-catalyzed cleavage to 3-isopropylidenecyclopentanecarboxylic acid (VI), m. 50°. VI was found to be identical with camphenoic acid (prepared by the hydrolysis of the nitrile produced in the camphene-one oxime-AcCl reaction); ozonolysis of VI produced cyclopentane-3-carboxylic acid, confirming the identity. The UV spectra of V had, in EtOH, 230 m μ (ish, e 3200) and 316 m μ (e 660); in 50% EtOH-0.1N NaOH, 234 m μ (e 4500) and 331 m μ (e 19,600). When an excess of N2O4 was swept with N into an Et2O solution of stilbene, the products (after hydrolysis of the nitronitrile) included 20.8% meso- α , α '-dinitrobenzyl, m. 235-7°, 32.2% dl- α , α '-dinitrobenzyl, m. 149-1°, erythro- α -hydroxy- α ', α '-dinitrobenzyl (VII), m. 99-100°, and 12.6% three- α -hydroxy- α ', α '-nitrobenzyl (VIII), m. 105-5-6.5°. With O as

carrier gas, the products varied with minor changes in reaction conditions producing from 13.8 to 28.8% mixture consisting of 44% VII and 56% VIII, from 5.4 to 24.9% of a mixture consisting of 65% erythro- α -nitro- α -phenylacetophenone (IX), m. 75.0-5.5°, 0-7.4% PhCO2H, and 0-1.1% PhCHO. Treatment of IX with alc. NaOH produced PhCO2H and PhCH2NO2. It was suggested that the nitroalkyl radicals reacted with O to form nitroperoxy or nitroperoxynitrate radicals.

L5 ANSWER 50 OF 52 CAPIUS COPYRIGHT 2006 ACS on STN
DOCUMENT NUMBER: 1959:121688 CAPIUS
ORIGINAL REFERENCE NO.: 53:161688
TITLE:
AUTHOR(S): Garner, Albert Y.; Chapin, Earl C.; Scanlon, Patricia M.
CORPORATE SOURCE:
SOURCE: Monsanto Chem. Co., Springfield, MA
Journal of Organic Chemistry (1959), 24, 532-6

CODEN: JOCEAH; ISSN: 0022-3263

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 53:121688

AB Support is given for the mechanism of the Michaelis-Arbuzov intermediate. The production of **olatin** and dialkyl phosphonate, (RO_2PH) 2C , is shown to be a general phenomenon when an α -haloalkane which has an activating group on the β -C is treated with a trialkyl phosphite. The formation of these products is explained in terms of an intramolecular β -elimination involving the quasi-phosphonium salt intermediate. $\text{PhCH}_2\text{CH}_2\text{Br}$ (92.5 g.), 74.9 g. NaI, and 50 mL Me 2CO refluxed overnight gave 92.9 g. $\text{PhCH}_2\text{CH}_2\text{I}$ (1), b1. 71°, n $_{25}\text{D}$ 1.5945.

Triphenoxyl- β -phenylphosphonium iodide (5 g.) left overnight with excess 10% aqueous NaOH gave 2.5 g. diphenyl phenethylphosphonate (II), needles, m. 75-6° (hexane). I (73 g.) and 146.2 g. P(OBu) $_3$ heated 5 days at 128°. the mixture mixed with Et 2O and Me 2CO until it was cream-colored, and the solvent removed gave 28.3 g. triphenoxypheophenylphosphonium iodide (III), m. 154-7° (sealed tube), gave an immediate precipitate with AgNO $_3$ which was insol. in dilute HNO $_3$.

MeCH 2Br (7.52 g.) refluxed 1.5 hrs. at 131° with addition of 183 g. P(OEt) $_3$, and heated 3.5 hrs. at 145°, 110.8 g. EtBr removed, and the residue fractionated gave 509.6 g. unreacted dibromide. The first-boiling fraction of 33.7 g. consisted of a mixture of di-Et vinylphosphonate, di-Et phosphonate, and di-Et ethylphosphonate as shown by infrared analysis and **vapor** phase chromatography. Subsequently 127 g. di-Et β -bromoethylphosphonate (IV), b1 90°, n $_{25}\text{D}$ 1.4564, was obtained. An intermediate fraction (7.7 g.), n $_{25}\text{D}$ 1.4473, which contained some tetraethyl ethylenediphosphonate, was followed by the sudden evolution of 13.4 g. of material which dropped the heat temperature to 30-72 mm., and had n $_{25}\text{D}$ 1.4300, shown to be pure di-Et vinylphosphonate (V). IV (50.7 g.) heated to 157° and 35.3 g. distilled P(OEt) $_3$ (VI) added dropwise in 3 hrs., the heating continued to a total of 6 hrs., and 17.9 g. EtBr removed, and vacuum distilled gave 21.8 g. of low boiling material of approx. 64.3% diethyl vinyl phosphonate, 25.3% V, 6.9% diethyl ethylphosphonate (VII), and 2.9% of unknown material. A higher boiling fraction consisted of 16.2 g. tetraethyl ethylenediphosphonate (VIII), b1, 151-7°, n $_{25}\text{D}$ 1.4397. Redistd. VI (90 g.) added dropwise during 3 hrs. to 100 g. Et β -bromopropionate at 155°, the mixture heated 5 hrs., and 48.4 g. EtBr removed during the heating. Vacuum distillation gave 21.9 g. material, b4-7 66-86°, whose infrared spectrum showed it to be di-Et phosphonate and probably VII. 80 g. Et-3-diethylphosphonopropionate, b2 114-15°, n $_{25}\text{D}$ 1.4301, and 24.1 g. poly(ethyl acrylate), n $_{25}\text{D}$ 1.3975. The acrylic monomer and polymer were identified by their infrared spectra. $\text{PhCH}_2\text{CH}_2\text{Br}$ (100 g.) heated to 165°, treated dropwise with 90.9 g. VI, the temperature rose slightly, and further heated for approx. 20 hrs. gave 33.6 g. EtBr; the mixture distilled in vacuo gave 43.9 g. of 1st fraction containing diethyl phosphonate, VII, and unreacted material; the 2nd fraction was mostly VII, 3.9 g., and the 3rd fraction of 61.8 g. consisted of di-Et phenethylphosphonate, b2.3 144-7°, n $_{25}\text{D}$ 1.4925. The residue was dissolved in C $_6\text{F}_6$ and 3.2 g. polystyrene was precipitated by MeOH. The cold trap contained 10.4 g. impure styrene. VII heated 5.5 hrs. at 211° and the material pumped down and heated gave no low-boiling materials. II (8.1 g.) was heated 2 hrs. at 210°/0.15 mm., still without decomposition and heated again 4.5 hrs. at 250-305°/5 mm., still without decomposition II was recovered. Then the sample was heated at atmospheric pressure up to 390° to give a trace of H $_2\text{O}$, and a viscous brown residue, which was strongly cicidic. The odor of styrene was strong in the trap but no styrene was isolated. The infrared spectrum showed polystyrene to be absent. III (10 g.) was dried overnight in vacuo, and heated 4 hrs. at 210-20°/0.15 mm.; the Dry Ice traps contained a small amount of liquid which had the odor of PhI and hinted at the presence of styrene.

Vapor phase chromatography showed the presence of a little styrene. The residue was crystallized to give II.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

OTHER SOURCE(S): CAPLUS COPYRIGHT 2006 ACS on STN

15 ANSWER 51 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1955-56335 CAPLUS

DOCUMENT NUMBER: 49:56835

ORIGINAL REFERENCE NO.: 49:11003-c-e

TITLE: Ketones

INVENTOR(S): Natta, Giulio; Ercoli, Raffaele

PATENT ASSIGNEE(S): "Montecatini" Societa Generale per l'Industria Mineraria e Chimica

PATENT NUMBER: Patent

DOCUMENT TYPE: LANGUAGE:

FAMILY R.C.C. NUM. COUNT: PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

IT 475040 ----- IT 19521009 IT

AB The process involves a reaction of **olefins** (including mixts. with paraffins) with CO (containing up to 10% H as an impurity), and primary or secondary alic., at 150-250° and 150-500 atm. atmospheric pressure, in the presence of Co-containing catalysts (fine Co, Raney Co, Co on an inert carrier, Co carbonyl or hydrocarbonyl, or other Co compds. which compare to the ones mentioned). Examples are: (1) secondary BuOH (1) 87 g., ethylene (II) 41-5.9°, Raney Co (III) 4°, and CO 140 l. in a 1-l. autoclave are shaken and warmed to 200-10° for 5 hrs., and cooled. Gas analysis shows that 25% of II did not react, while the liquid phase was shown to contain ketones 42.5, II 43.5, and propionaldehyde (IV) 3%. The yield of Et 2CO (V) was 65% based on the weight of II reacted. (2) MeOH 75 g., II 1.25 g., III 3 g., and CO 180 l. were treated in the autoclave at 190-95° for 85 hrs. to give: unreacted II 19%, and V 53%. Me propionate 20, and IV 7%, (based on the weight of II reacted); MeOH 220 g., propylene (VI) 84 g., III 16 g., and CO 105 l. at 20-10°, and 150-300 atm. atmospheric yield unreacted VI 49% and C7-ketones 27.5%. Me butyrate and isobutyrate 33% based on the weight of VI reacted.

15 ANSWER 52 OF 52 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1939-32391 CAPLUS

DOCUMENT NUMBER: 33:33391

ORIGINAL REFERENCE NO.: 33:47790-i, 4580a-h

TITLE: Oxidation of ethylenic hydrocarbons with selenium dioxide

AUTHOR(S): Guillenmont, Andre

SOURCE: Annali di Chimica Applicata (1939), 11, 143-211

DOCUMENT TYPE: JOURNAL

OTHER SOURCE(S): CASREACT 33:32391

AB I. Pulverized SeO₂ (from the oxidation of Se in the presence of nitrous vapors) is slowly introduced into a mixture of AcOH, Ac₂O and excess hydrocarbon while stirring vigorously so that the reagent does not settle to the bottom of the flask. The SeO₂ disappears slowly and Se ppt. When all the SeO₂ has reacted, the mixture is refluxed for at least 10 h., cooled, the Se separated, and the excess AcOH and Ac₂O are removed by washing with H₂O. The crude colored product is steam-distilled and the residue pyrolyzed at atmospheric pressure or under a vacuum. The pyrolysis products differ from the products in the distillate. Oxidation in a basic medium (pure pyridine) was unsuccessful. Various solvents were tried, including EtOH, xylene, H₂O, but AcOH proved most favorable both as to yield and product quality. In all instances the double bond is preserved. II. Oxidation of completely substituted ethylenic C atoms. I. Aliphatic hydrocarbons. In all instances an appreciable amount of the initial hydrocarbon is recovered unattacked.

The oxidation occurs on the C in the α -position to the substituted atom; there is formed an alc. of the structure $RCH(OH)CMe:CHMe$. In order of decreasing ease of oxidation the radicals are CH_2 , Me, CH . The rates of oxidation are so different that only 1 of the possible alcs. forms if the radicals in the α -position are different. 2-Methyl-2-butene forms the acetate of 2-(methyl)-2-butene-1-ol, which on saponification with $Ba(OH)_2$ yields the alc., b160 136-8°. Likewise, 3-methyl-2-pentene forms 3-methyl-3-penten-2-ol, b18 54-6°. 2,3-Dimethyl-3-pentene (from the oxidation of 3-methyl-3-pentene by SeO₂ to 3-methyl-3-penten-2-ol, b760, b22 82°, 2,3-trimethyl-3-pentene forms 2-tert-butyl-2-butene-1-ol, b760 65.7°, d421 0-120, n21 1.435, oxidizes to 2-isopropyl-2-butene-1-ol, b14 at 61-3°. 2-Methyl-2-pentene yields 2-methyl-2-penten-1-ol, b20 12-30°. 2. Cyclic hydrocarbons. It was observed that oxidation will occur in the α -position to the most substituted C atom and also in the cycle if it is possible. Oxidation of the η -phibond CH group leads to conjugated dienes by way of the dehydration of tertiary alcs. Conjugated dienes also result from the oxidation of hydrocarbons possessing cyclic bi-tertiary double bonds. Thus, 1-ethylcyclohexene yields 30% of a liquid acetate of 1-ethylcyclohexen-6-ol which hydrolyzes to the corresponding alc., b12 82-83°. 1-Ethylcyclopentene forms 1-ethylcyclopenten-5-ol, b20 74-5°. 1,6-Dimethylcyclohexene oxidizes to 5 fractions, b127-8°, 130-5°, 132-5°, 134°, and 135.5. Each fraction contains α -xylene, a quantity of a liquid b760 132-5°, n20D by 1.4682, d420 0.832, and also 2,3-dimethyl-,3-cyclohexadiene, identified as its maleic anhydride derivative, m. 122-3°. 1,2-Dimethylcyclohexene oxidizes to form 2 fractions. The 1st consists of α -xylene, and 2,3-dimethyl-1,3-cyclohexadiene, identified as above and also by its derivative with Li^+ -phibond-CCO*Mg*(*E*)₂, b760 165-170°, which is hydrogenated to 4,5-dimethyl-1,2-phthalic acid, m. 196°. The 2nd fraction is a mixture of 2 acetates, one ethylenic and one dienic, yielding, on saponification, alc. products b23 95°, nD₂₀ 1.500, d419 0.971, but not in sufficient量 to identify. III. Oxidation of hydrocarbons neither of whose ethylenic C atoms is completely substituted. 1. Aliphatic hydrocarbons.-Again, oxidation occurs in the α -position to the ethylenic C. The CH₂ radical oxidizes more readily than Me. A double bond at the end of the chain is as active as a bi-secondary bond but due to transposition a primary alc. forms instead of a secondary alc. If a CH₂ radical is present on each side of the ethylenic C, both are oxidized and a mixture of alcs. forms which it is impossible to sep. Thus, 2-pentene forms the acetate of 2-penten-4-ol which is saponified to the corresponding alc., b760 118-21°. 1-Heptene yields 2-hexen-1-ol, b760 156°, with a small amount of 1-hexen-3(?)-ol. 4-Nonenene on oxidation yields a liquid, b15 89-91°, which on saponification forms a viscous liquid, b11 85-7°, and which is hydrogenated to a substance b18 93°.

All attempts to prepare crystalline derivs. have failed. Presumably, the product is a mixture of nonenols formed by oxidation of the two CH₂ groups in the α -position to the ethylenic C atoms. Likewise, 3-nonenene forms an acetate, b17 98-101°, which is saponified to nonenols, b15 93-5°, and hydrogenated to a mixture of nonanols, b17 93°. As in the preceding case no crystalline derivs. could be prepared. 2. Cyclic hydrocarbons. While not so reactive as compds. with double-linked tertiary C atoms, cyclic hydrocarbons with bi-secondary ethylenic bonds do produce yields as high as 30-40%. Again the α -position is attacked. The CH₂ group is more active than the CH. Again, also, both possible CH₂ groups are attacked simultaneously. Transpositions of the allylpropenyl type occur readily. Thus, cyclonexene yields the acetate of 1-cyclonexen-3-ol, b15 68-70°, saponifying to the corresponding alc., b15 67°, identified by its phenylurethane, m. 106 5-7.5°. Oxidation by CrO₃ forms the corresponding ketone whose semicarbazone m. 161°. 3-Methylcyclohexene likewise produces 6-methylcyclohexen-3-ol, b20 88-90°, which is hydrogenated to 4-methylcyclohexanol, b760

169°. Small量s. of Methyl, 4-methylcyclohexene and 4-methylcyclohexen-3-ol also result from the oxidation 4-Methylcyclohexene forms a mixture of the acetates of 4-, 5- and 6-methylcyclohexen-3-ol, b22 81-3°, the 1st predominating. The 3, corresponding alcs., formed on saponification, b22 92-3°, is obtained which is also a mixture of the 3 acetates above but with the 5-Me derivative predominating. For all the oxidation products the author gives b., p., d., n., mol. refraction, as well as m. ps. of the various derivs. mentioned and in some cases C and H analyses. IV. Mechanism of the oxidation. The postulated mechanism may best be represented by means of the following equations in which R is a radical containing the ethylenic bond: (1) $4RH_2\cdot H + SeO_2$ $\rightarrow (RCH_2)_4Se + 2H_2O$ (2) $(RCH_2)_4Se + H_2O \rightarrow (RCH_2)_4Se + (RCH_2)_2Se + (RCH_2)_2Se + Se$ (4) (MECH: $CMeCH_2)_2Se \rightarrow CH_2:CMe-CMe_2 + Me_2C:CHMe + Se$ This proposed mechanism explains (1) the fact that a portion of the original hydrocarbon is recovered although the theor. amount of SeO₂ is used, (2) the formation of an alkyl acetate even at low temps. since HOAc may supplant HOH in reaction 2 above, (3) the formation of an ether oxide in an absolute alc. medium by a mechanism similar to that which furnishes the acetate and (4) the formation of dienes with conjugated systems. This mechanism is supported by exptl. data on the oxidation of trimethylethylene in benzene. V. A complete table of the Raman spectra of all the compds. mentioned in the previous chapters is given, 38 compds. being listed in all.

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